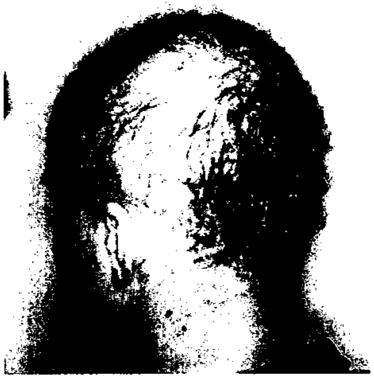


Fig. 1a

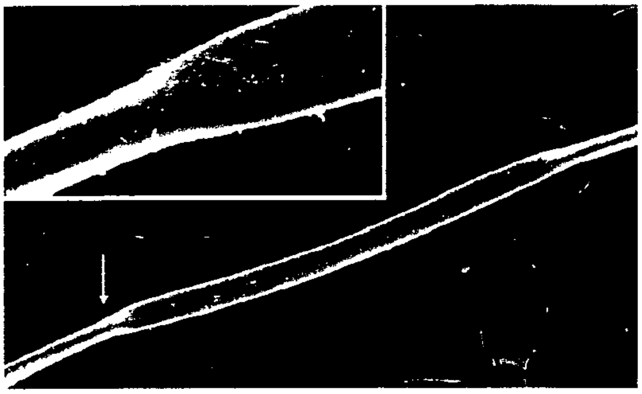


Fig. 1b

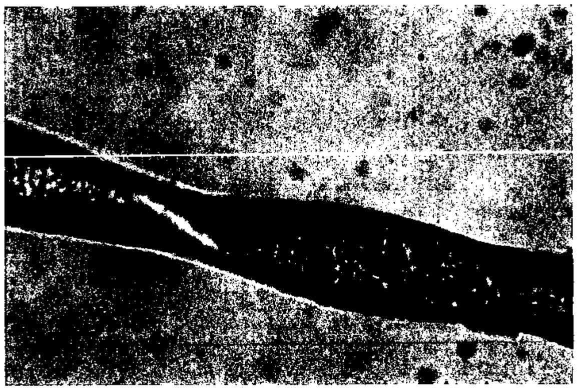


Fig. 1c

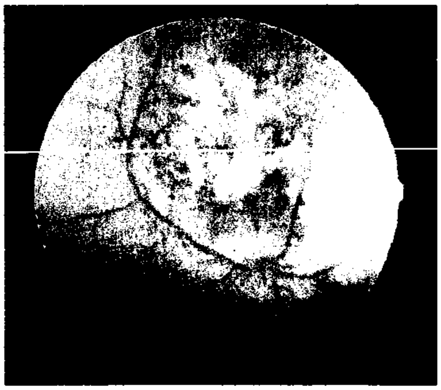
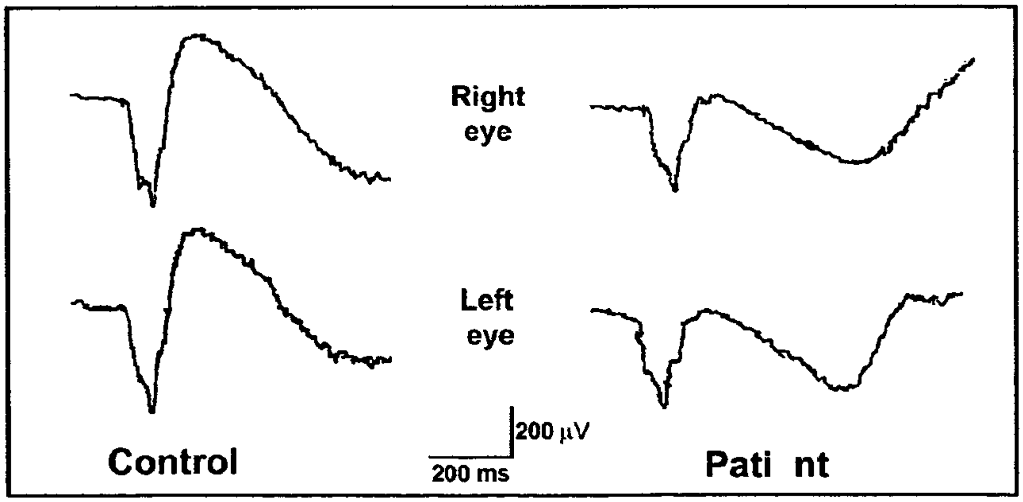


Fig. 1d



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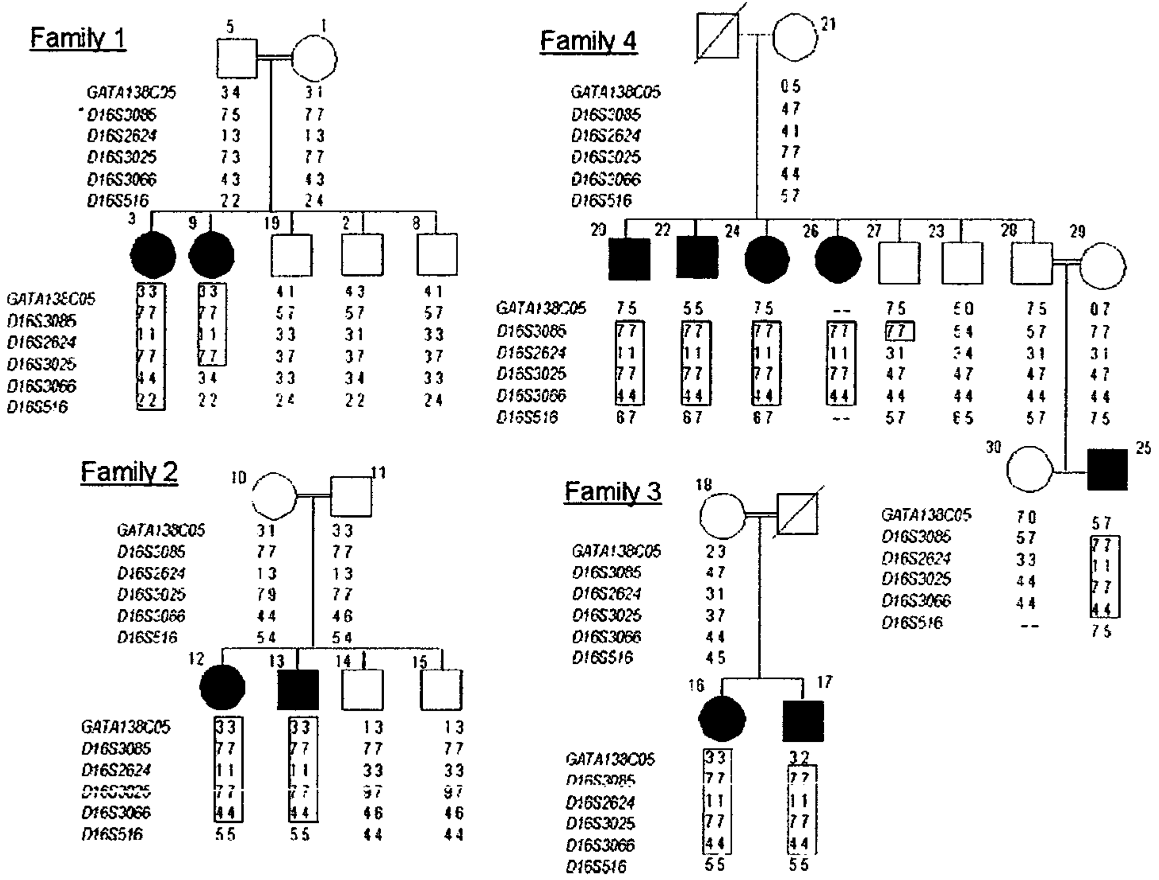
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3 9 19 2 8
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D16S3085 77 77 57 57 57
D16S2624 11 11 33 31 33
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Family 4
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D16S516 67 67 67 -- 57 65 57 75
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D16S3066 44
D16S516 45
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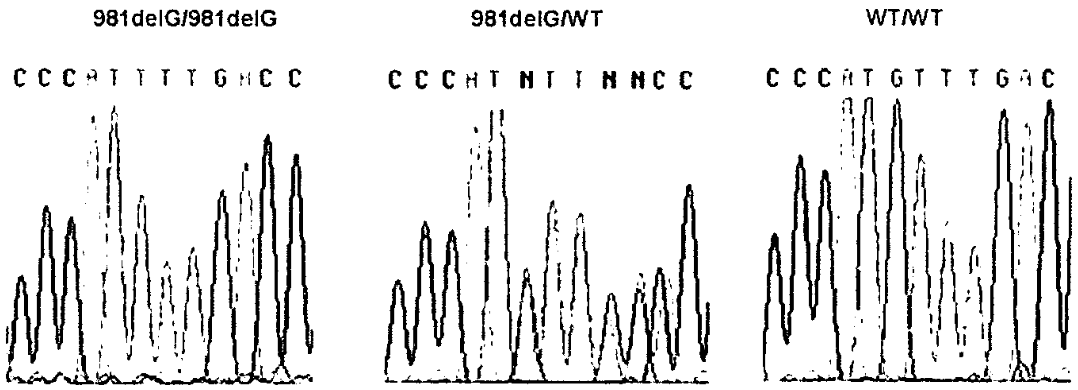
Fig. 2a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WT/WT
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Fig. 2b

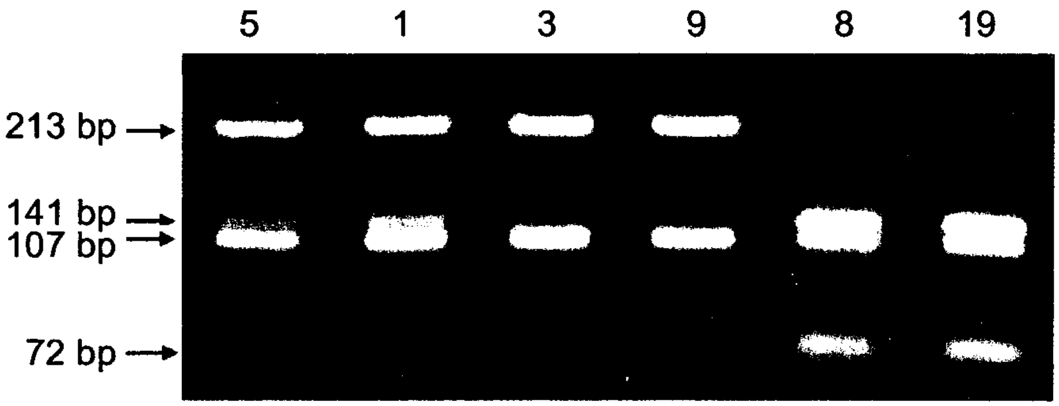

Fig. 2c

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Fig. 2d

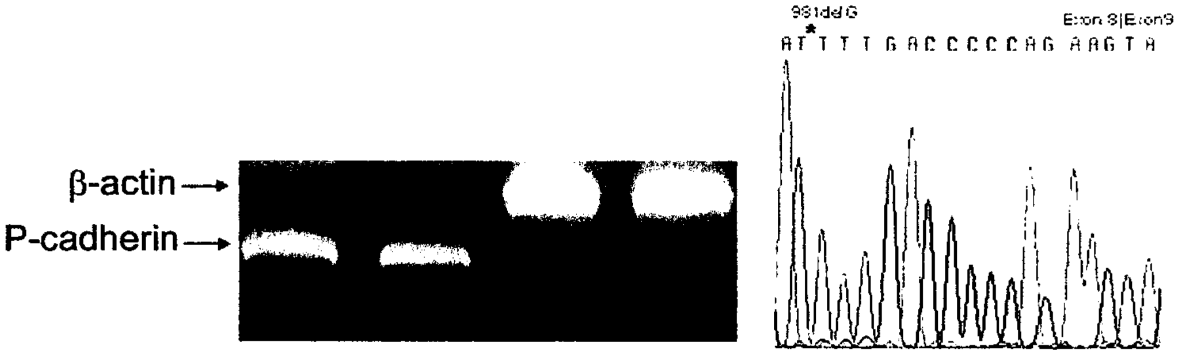
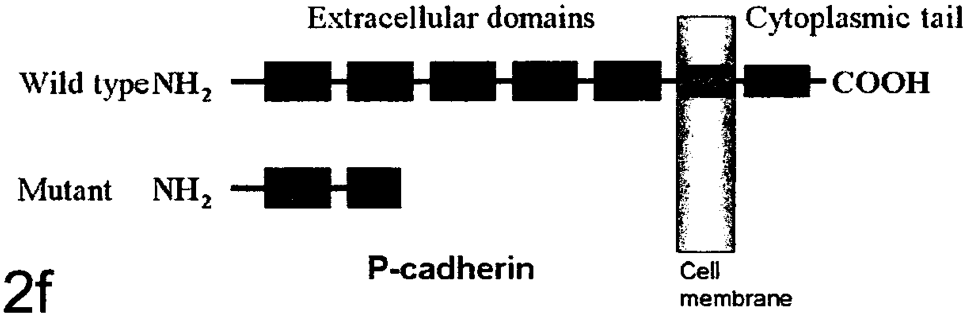


Fig. 2e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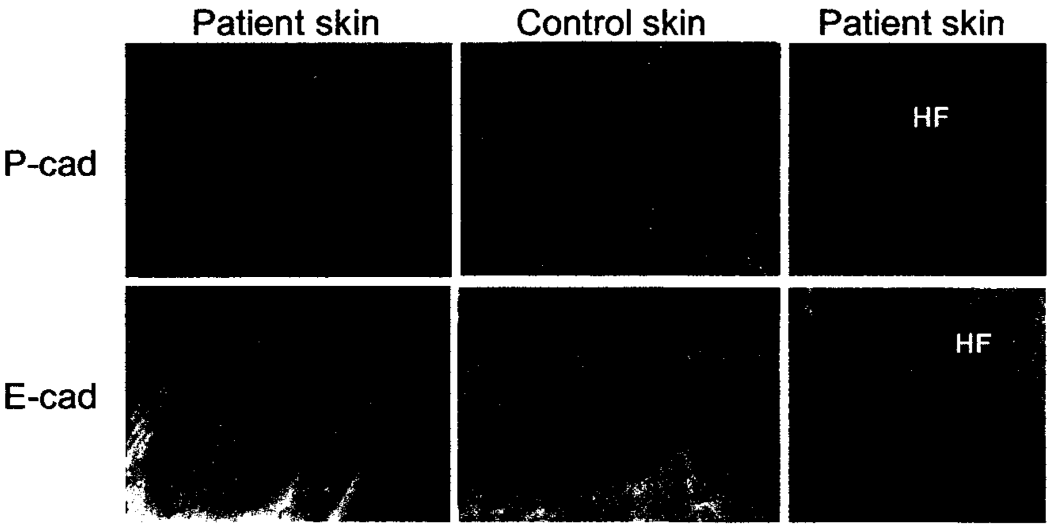
Wild type
NH2
COOH
Mutant
NH2
P-cadherin
Cell membrane

Fig. 2f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Control skin
Patient skin
P-cad
E-cad
HF
HF

Fig. 2g

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K-CAD(seq id no:16)    ------------------------------------------------------------
CAD12(seq id no:17)    ------------------------------------------------------------
CAD8(seq id no:18)     ------------------------------------------------------------
OB-CAD(seq id no:19)   ------------------------------------------------------------
VE-CAD(seq id no:20)   ------------------------------------------------------------

P-CAD(seq id no:11)    ------------------------------------------------------------
E-CAD(seq id no:12)    -------------------------------AGTGGCGTCGGAACTGCAAAGCACCTGTG 29
N-CAD(seq id no:13)    AGGGGAGGGGAAGGGAAGGGGGTGGAAACTGCCTGGAGCCGTTTCTCCGCGCCGCTGTTG 120
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OB-CAD(seq id no:19)   ------------------------------------------------------------
VE-CAD(seq id no:20)   ------------------------------------------------------------

P-CAD(seq id no:11)    ------------------------------------------------------------
E-CAD(seq id no:12)    AGCTTGCGGAAGTCAGTTCAGACTCCAGCCCGCTCCAGCCCGGCCCGACCCGACCGCACC 89
N-CAD(seq id no:13)    GTGCTGCCGCTGCCTCCTCCTCCTCCGCCGCCGCCGCCGCCGCCGCCGCCTCCTCCGGCT 180
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K-CAD(seq id no:16)    ------------------------------------------------------------
CAD12(seq id no:17)    ------------------------------------------------------------
CAD8(seq id no:18)     ------------------------------------------------------------
OB-CAD(seq id no:19)   ------------------------------------------------------------
VE-CAD(seq id no:20)   ------------------------------------------------------------

P-CAD(seq id no:11)    ------------------------------------------------------------
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N-CAD(seq id no:13)    CTTCGCTCGGCCCCTCTCCGCCTCCATGTGCCGGATAGCGGGAGCGCTGCGGACCCTGCT 240
R-CAD(seq id no:14)    -----------CGCCGGCGGGGAAGAT GACCGCGGGCGCCGGCGTGCTCC---TTCTGCT 46
M-CAD(seq id no:15)    ------------------------------------------------------------
K-CAD(seq id no:16)    --------------------ACTTCATTCACTTGCAAATCAGTGTGTGCCCACAAGAGCC 40
CAD12(seq id no:17)    ------------------------------------------------------------
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VE-CAD(seq id no:20)   ------------------------------------------------------------

P-CAD(seq id no:11)    ------------------------AAAGGGGCAAGAGCTGAGCGGAACACCGGCCCGCCG 36
E-CAD(seq id no:12)    CTCGGCGCTGCTGCTGCTGCTGCAGGTCTCCTCTTGGCTCTGCCAGGAGCCGGAGCCCTG 207
N-CAD(seq id no:13)    GCCGCTGCTGGCGGCCCTGCTTCAGGCGTCTGTAGAGGCTTCTGGTGAAATCGCATTATG 300
R-CAD(seq id no:14)    GCTCTCGCTCTCCGGCGCGCTCCGGGCCCATAATGAGGATCTTACA ACTAGAGAGACCTG 106
M-CAD(seq id no:15)    ------------------------------------------------------------
K-CAD(seq id no:16)    AGCTCTCCCGAGCCCGTAACCTTCGCATCCCAAGAGCTGCAGTTTCAGCCGCGACAGCAA 100
CAD12(seq id no:17)    ------------------------------------------------------------
CAD8(seq id no:18)     ------------------------------------------------------------
OB-CAD(seq id no:19)   ------------------------------------------------------------
VE-CAD(seq id no:20)   ------------------------------------------------------------
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Fig. 3a

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N-CAD(seq id no:13)     CAAGACTGGATTTCCTGAAGATGTTTACAGTGCAGTCTTATCGAAGGATGTGCATGAAGG 360
R-CAD(seq id no:14)     CAAGGCTGGGTTCTCTGAAGATGATTACACGGCATTAATCTCCCAAAATATTCTAGAAGG 166
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GAACGGCAGAGCCGGCGACCGCGGCGGCGGCGGCGGAGGCAGGAGCAGCCTGGGCGG 160
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     GTCTCTCCTCCTTCTCCAGG ------TTTGCTGGCTGCAGTGCGCGGCCTCCGA -GCCGT 149
E-CAD(seq id no:12)     GAGGCCGCGTCCTGGGCAGAGTGAATTTTGAAGATTGCACCGGTCGACAAAGGACAGCCT 326
N-CAD(seq id no:13)     ACAGCCTCTTCTCAATGTGA ----AGTTTAGCAACTGCAATGGAAAAAGAAAAGTACAAT 416
R-CAD(seq id no:14)     GGAAAAGCTACTTCAAGTCA ----AGTTCAGCAGCTGTGTGGGGACCAAGGGGACACAAT 222
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GTCGCAGGGTCTCCGCGGGCGC --AGGAAGGCGAGCAGAGATATCCTCTGAGAGCCAAGC 218
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ---CGGCAGCCCTGACGTGATG--AGCTCAACCAGCAGAGACATTCCATCCCAAGAGAGG 55
VE-CAD(seq id no:20)    --------------------------------------------------------- ACG 3

P-CAD(seq id no:11)     GCCGGGCGGTC ---TTCAGGGAGGCTGAAGTGACCTTGGAGGCGGGAGGCGCGGAGCAGG 206
E-CAD(seq id no:12)     ATTTTTCCCTC ---GACACCCGATTCAAAGTGGGCACAGATGGTGTGATTACAGTCAAAA 383
N-CAD(seq id no:13)     ATGAGAGCAGTGAGCCTGCAGATTTTAAGGTGGATGAAGATGGCATGGTGTATGCCGTGA 476
R-CAD(seq id no:14)     ATGAGACCAAC -AGCATG--GACTTCAAAGTTGGGGCAGATGGGACAGTCTTCGCCACCC 279
M-CAD(seq id no:15)     --------------------------------------------- ACTTGCGCTGTCACTC 16
K-CAD(seq id no:16)     AAAGAACATTAAGGAAGGAAGGA -GGAATGAGGCTGGATACGGTGCAGTGAAAAAGGCAC 277
CAD12(seq id no:17)     ------CGGTGGAGGCCACAGAC-ACCTCAAACCTGGATTCCACA-ATTCTACGTTAAGT 52
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    TCTGCGTGACGCGTCCGGGAGGCCACCCTCAGCAAGACCACCGTACAGTTGGTGGAAGGG 115
VE-CAD(seq id no:20)    GTCGGCTGACAGGCTCCACAGAGCTCCACTCACGCTCAGGCCCTGGACGGACAGGCAGTC 63

P-CAD(seq id no:11)     AGCCCGGCCAGGCGC -TGGGGAAAGTATTCATGGGCTGCCCTGGGCAAGAG------CCA 259
E-CAD(seq id no:12)     GGCCTCTACGGTTTCATAACCCACAGATCCATTTCTTGGTCTACGCCTGGGAC ---TCCA 440
N-CAD(seq id no:13)     GAAGCTTTCCACTCTCTTCTGAGCATGCCAAGTTCCTGATATATGCCCAAGACAAAGAGA 536
R-CAD(seq id no:14)     GGGAGCTGCAGGTCCCCTCCGAGCAGGTGGCGTTCACGGTGACTGCATGGGACAGCCAGA 339
M-CAD(seq id no:15)     AGCCTGGACGCGCTTCTTCGGGTCGCGGGTGCACTCCGGCCCGGCTC ----------CCG 66
K-CAD(seq id no:16)     TTCCAAGAGTGGGGCACTC --ACTACGCACAGAC--TCGACGGTGCCAT--------CAG 325
CAD12(seq id no:17)     GTTGGAGTTTTTATTACTCT -GCTGTAGGAAAGCCTTTGCCAATGCTTA --------CAA 103
CAD8(seq id no:18)      ------------------------------------ CAGGAAATGCTCT--------TGG 16
OB-CAD(seq id no:19)    GTGACAGCT ----GCATTCT-CCTGTGCCTACCACGTAACCAAAAATGA --------AGG 162
VE-CAD(seq id no:20)    CAACGGAACAGAAACATCCC -TCAGCCCCACAGGCACGATCTGTTCCTC --------CTG 114

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N-CAD(seq id no:13)     CCCAGGAAAAGTGGCAAGTGGCAGTAAAATTGAGCCTGAAGCCA --ACCTTAACTGAGGA 594
R-CAD(seq id no:14)     CAGCAGAGAAATGGGACGCCGTGGTGCGGTTGCTGGTGGCCCAG --ACCTCGTCCCCGCA 397
M-CAD(seq id no:15)     CCTCGGCCCCGATGGACGCCGCGTTCCTCCTCGTCCTCGGGCTGTTGGCCCAGAGCCTCT 12 6
K-CAD(seq id no:16)     CAT --GAGAACTTACCGCTACTTCTTGCTGCTCTTTTGGGTGGGCCAGCCCTACCCAACT 383
CAD12(seq id no:17)     GG ---AACTGTTTATCCCTGCTTCTCTGGGTTCTGTTTGATGG ---AGGTCT-CCTAACA 156
CAD8(seq id no:18)      ATCTCTGGACTCCATTAATAATATTATGGATTAC TCTTCCCCC-TTGCATTTACATGGCT 75
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VE-CAD(seq id no:20)    GGAAGATGCAGAGGCTCATGATGCTCCTCGCCACATCGGGCGC -------CTGCCTGGGC 167

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N-CAD(seq id no:13)     GTCAGTGA-AGGAGTCAGCAGAAGTTGAAGAAATAGTG -------------------TTC 634
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CAD8(seq id no:18)      CCGATGAATCAGTCTCAAGTTTTAATGAGTG GATCCCC--------------------TT 115
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VE-CAD(seq id no:20)    CTGCTGGCAGTGGCAGCAGTGGCAGC -AGCAGGTGCTA--------------------AC 206
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Fig. 3b

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N-CAD(seq id no:13)      CCAAGACAATTCAGTA-----------AGCAC---AGTGGCCACCTACAAAGGCAG---A 677
R-CAD(seq id no:14)      CGAAGGACACCCTGCTGCCGTGGCCCCAGCACCAGAACGCCAACGGGCTGAGGCGGCGCA 516
M-CAD(seq id no:15)      CCTGTACCCCT----------------GGCGCCGGGCGCCTGCCCT---GAGCCGCGTGC 207
K-CAD(seq id no:16)      CAAAGAAAAGGGCCCTG---GAGCTCTCTGGAAACAGCAAAAATGAGCTGAACCGTTCAA 480
CAD12(seq id no:17)      CCAAGAGAAAA-TGTTA---TCCATCTGCCAGGACAACGGTCAC-ATTTCCAACGTGTTA 250
CAD8(seq id no:18)       TGGAACTAAA-----------CAGTCTGGGTGAAGAACAGCGAA-TTTGAACCGCTCCA 163
OB-CAD(seq id no:19)     CCATGGGCACC----------ATGAGAAGGGCAAGGAGGGGCAGGTGCTACAGCGCTCCA 309
VE-CAD(seq id no:20)     CCTGCCCAACG----------GGACACCCACAGCCTGCTGCCCA-CCCACCGGCGCCAAA 255
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P-CAD(seq id no:11)      AGAGAGATTGGGTGGTTGCTCCAATATCTGTCCCTGAAAATGGCAAGGGTCCCTTCCCCC 446
E-CAD(seq id no:12)      AGAGAGACTGGGTTATTCCTCCCATCAGCTGCCCAGAAAATGAAAAAGGCCCATTTCCTA 641
N-CAD(seq id no:13)      AGAGAGACTGGGTCATCCCTCCAATCAACTTGCCAGAAAACTCCAGGGGACCTTTTCCTC 737
R-CAD(seq id no:14)      AACGGGACTGGGTCATCCCGCCCATCAACGTGCCCGAGAACTCGCGCGGGCCCTTCCCGC 576
M-CAD(seq id no:15)      GGAGGGCCTGGGTCATCCCCCCGATCAGCGTATCCGAGAACCACAAGCGTC---TCCCCT 264
K-CAD(seq id no:16)      AAAGGAGCTGGATGTGGAATCAGTTCTTTCTCCTGGAGGAATACACAGGATCCGATTATC 540
CAD12(seq id no:17)      AACGTGGCTGGGTATGGAATCAATTTTTTGTGCTGGAAGAATACGTGGGCTCCGAGCCTC 310
CAD8(seq id no:18)       AAAGAGGCTGGGTTTGGAATCAAATGTTTGTCCTGGAAGAGTTTTCTGGACCTGAACCGA 223
OB-CAD(seq id no:19)     AGCGTGGCTGGGTCTGGAACCAGTTCTTCGTGATAGAGGAGTACACCGGGCCTGACCCCG 369
VE-CAD(seq id no:20)     AGAGAGATTGGATTTGGAACCAGATGCACATTGATGAAGAGAAAAACACCTCACTTCCCC 315
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P-CAD(seq id no:11)      AGAGACTGAATCAGCTCAAGTCTAATAAAGATAGAGACACCA---AGATTTTCTACAGCA 503
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N-CAD(seq id no:13)      AAGAGCTTGTCAGGATCAGGTCTGATAGAGATAAAAACCTTT---CACTGCGGTACAGTG 794
R-CAD(seq id no:14)      AGCAGCTCGTGAGGATCCGGTCCGACAAAGACAATGACATCC---CCATCCGGTACAGCA 633
M-CAD(seq id no:15)      ACCCCCTGGTTCAGATCAAGTCGGACAAGCAGCAGCTGGGCA---GCGTCATCTACAGCA 321
K-CAD(seq id no:16)      AGTATGTGGGCAAGTTACATTCAGACCAGGATAGAGGAGATGGATCACTTAAATATATCC 600
CAD12(seq id no:17)      AGTATGTGGGAAAGCTCCATTCCGACTTAGACAAGGGAGAGGGCACTGTGAAATACACCC 370
CAD8(seq id no:18)       TTCTTGTTGGCCGGCTACACACAGACCTGGATCCTGGGAGCAAAAAAATCAAGTATATCC 283
OB-CAD(seq id no:19)     TGCTTGTGGGCAGGCTTCATTCAGATATTGACTCTGGTGATGGGAACATTAAATACATTC 429
VE-CAD(seq id no:20)     ATCATGTAGGCAAGATCAAGTCAAGCGTGAGTCGCAAGAATG------CCAAGTACCTGC 369
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K-CAD(seq id no:16)      TTTCAGGAGATGGAGCAGGAGA------------TCTCTTCATTATTAATGAAAACACAG 648
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CAD8(seq id no:18)       TATCAGGTGATGGAGCTGGGAC------------CATATTTCAAATAAATGATGTAACTG 331
OB CAD(seq id no:19)     TCTCAGGGGAAGGAGCTGGAAC------------CATTTTTGTGATTGATGACAAATCAG 477
VE-CAD(seq id no:20)     TCAAAGGAGAATATGTGGGCAA------------GGTCTTCCGGGTCGATGCAGAGACAG 417
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N-CAD(seq id no:13)      GTCAGCTGTCGGTGACAAAGCCCCTGGATCGCGAGCAGATAGCCCGGTTTCATTTGAGGG 914
R-CAD(seq id no:14)      GCCGGATGTACGTCACAAGGCCCATGGACCGGGAGGAGCACGCCTCTTACCACCTCCGAG 753
M-CAD(seq id no:15)      GGAAGGTCTTCCTCAATGCCATGCTGGACCGCGAGAAGACTGATCGCTTCAGGCTAAGAG 441
K-CAD(seq id no:16)      GCGACATACAGGCCACCAAGAGGCTGGACAGGGAAGAAAAACCCGTTTACATCCTTCGAG 708
CAD12(seq id no:17)      GGGACATTCATGCAATAAGGAGCCTAGATAGAGAAGAGAAACCTTTCTACACTCTTCGTG 478
CAD8(seq id no:18)       GAGATATCCATGCTATAAAAAGACTTGACCGGGAGGAAAAGGCTGAGTATACCCTAACAG 391
OB-CAD(seq id no:19)     GGAACATTCATGCCACCAAGACGTTGGATCGAGAAGAGAGAGCCCAGTACACGTTGATGG 537
VE-CAD(seq id no:20)     GAGACGTGTTCGCCATTGAGAGGCTGGACCGGGAGAATATCTCAGAGTACCACCTCACTG 477
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P-CAD(seq id no:11)      GCCACGCTGTGTCAGAGAA---TGGTGCCTCAGTGGAGGACCCCATGAACATCTCCATCA 680
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N-CAD(seq id no:13)      CACATGCAGTAGATATTAA---TGGAAATCAAGTGGAGAACCCCATTGACATTGTCATCA 971
R-CAD(seq id no:14)      CCCACGCTGTGGACATGAA---TGGCAACAAGGTGGAGAACCCCATCGACCTGTACATCT 810
M-CAD(seq id no:15)      CGTTTGCCCTGGACCTGGG---AGGATCCACCCTGGAGGACCCCACGGACCTGGAGATTG 496
K-CAD(seq id no:16)      CTCAAGCTATAAACAGAAGGACAGGGAGACCCGTGGAGCCCGAGTCTGAATTCATCATCA 768
CAD12(seq id no:17)      CTCAGGCTGTGGACATAGAAACCAGAAAGCCCCTGGAGCCTGAATCAGAATTCATCATCA 538
CAD8(seq id no:18)       CTCAAGCAGTGGACTGCCACACAACCAAACCTCTGCAGCCTCCTTCTCAATTTATTATTA 451
OB-CAD(seq id no:19)     CTCAGGCGGTGGACAGGGACACCAATCGGCCACTGGAGCCACCGTCGGAATTCATTGTCA 597
VE-CAD(seq id no:20)     CTGTCATTGTGGACAAGGACACTGGTGAAAACCTGGAGACTCCTTCCAGCTTCACCATCA 537
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Fig. 3c

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E-CAD(seq id no:12)   CGGTAACCGATCAGAATGACAACAAGCCCGAATTCACCCAGGAGGTCTTTAAGGGGTCTG 935
N-CAD(seq id no:13)   ATGTTATTGACATGAATGACAACAGACCTGAGTTCTTACACCAGGTTTGGAATGGGACAG 1031
R-CAD(seq id no:14)   ACGTCATCGACATGAATGACAACCGCCCTGAGTTCATCAACCAGGTCTACAACGGCTCCG 870
M-CAD(seq id no:15)   TAGTTGTGGATCAGAATGACAACCGGCCAGCCTTCCTGCAGGAGGCGTTCACTGGCCGCG 558
K-CAD(seq id no:16)   AGATCCATGACATCAATGACAATGAACCAATATTCACCAAGGAGGTTTACACAGCCACTG 828
CAD12(seq id no:17)   AAGTGCAGGATATTAATGATAATGAGCCAAAGTTTTTGGATGGACCTTATGTTGCTACTG 598
CAD8(seq id no:18)    AAGTTCAAGACATCAATGACAATGCACCAGAGTTTCTTAATGGACCCTATCATGCTACTG 511
OB-CAD(seq id no:19)  AGGTCCAGGACATTAATGACAACCCTCCGGAGTTCCTGCACGAGACCTATCATGCCAACG 657
VE-CAD(seq id no:20)  AAGTTCATGACGTGAACGACAACTGGCCTGTGTTCACGCATCGGTTGTTCAATGCGTCCG 597
                         *    **    ** **  *    **    **     *       *     *     *

P-CAD(seq id no:11)   TCTTAGAGGGAGTCCTACCAGGTACTTCTGTGATGCAGGTGACAGCCACGGATGAGGATG 800
E-CAD(seq id no:12)   TCATGGAAGGTGCTCTTCCAGGAACCTCTGTGATGGAGGTCACAGCCACAGACGCGGACG 995
N-CAD(seq id no:13)   TTCCTGAGGGATCAAAGCCTGGAACATATGTGATGACCGTAACAGCAATTGATGCTGACG 1091
R-CAD(seq id no:14)   TGGACGAGGGCTCCAAGCCAGGCACCTACGTGATGACCGTCACGGCCAACGATGCTGACG 930
M-CAD(seq id no:15)   TGCTGGAGGGTGCAGTCCCAGGCACCTATGTGACCAGGGCAGAGGCCACAGATGCCGACG 618
K-CAD(seq id no:16)   TCCCTGAAATGTCTGATGTCGGTACATTTGTTGTCCAAGTCACTGCGACGGATGCAGATG 888
CAD12(seq id no:17)   TTCCAGAAATGTCTCCTGTGGGTGCATATGTACTCCAGGTCAAGGCCACAGATGCAGATG 658
CAD8(seq id no:18)    TGCCAGAAATGTCCATTTTGGGTACATCTGTCACTAACGTCACTGCGACCGACGCTGATG 571
OB-CAD(seq id no:19)  TGCCTGAGAGGTCCAATGTGGGAACGTCAGTAATCCAGGTGACAGCTTCAGATGCAGATG 717
VE-CAD(seq id no:20)  TGCCTGAGTCGTCGGCTGTGGGGACCTCAGTCATCTCTGTGACAGCAGTGGATGCAGACG 657
                      *    **             **  * *  **       *     **    ** *  ** *

P-CAD(seq id no:11)   ATGCCATCTACACCTACAATGGGGTGGTTGCTTACTCCATCCATAGCCAAGAACCAAAGG 860
E-CAD(seq id no:12)   ATGATGTGAACACCTACAATGCCGCCATCGCTTACACCATCCTCAGCCAAGATCCTGAGC 1055
N-CAD(seq id no:13)   ATCCCA---ATGCCCTCAATGGGATGTTGAGGTACAGAATCGTGTCTCAGGCTCCAAGCA 1148
R-CAD(seq id no:14)   ACAGCA---CCACGGCCAACGGGATGGTGCGGTACCGGATCGTGACCCAGACCCCACAGA 987
M-CAD(seq id no:15)   ACCCCG---AGACGGACAACGCAGCGCTGCGGTTCTCCATCCTGCAGCAGGGC-----AG 670
K-CAD(seq id no:16)   ATCCAACATATGGGAACAGTGCTAAAGTTGTCTACAGTATTCTACA--GGGAC-----AG 941
CAD12(seq id no:17)   ACCCGACCTATGGAAACAGTGCCAGAGTCGTTTACAGCATTCTTCA--GGGAC-----AA 711
CAD8(seq id no:18)    ACCCAGTTTATGGAAACAGTGCAAAGTTGGTTTATAGTATATTGGA--AGGGC-----AG 624
OB-CAD(seq id no:19)  ACCCCACTTATGGAAATAGCGCCAAGTTAGTGTACAGTATCCTCGA--AGGAC-----AA 770
VE-CAD(seq id no:20)  ACCCCACTGTGGGAGACCACGCCTCTGTCATGTACCAAATCCTGAA--GGGGA-----AA 710
                      *                   *      *    *     **

P-CAD(seq id no:11)   ACCCACACGACCTCATGTTCACCATTCACCGGAGCACAGGCACCATCAGCGTCATCTCCA 920
E-CAD(seq id no:12)   TCCCTGACAAAAATATGTTCACCATTAACAGGAACACAGGAGTCATCAGTGTGGTCACCA 1115
N-CAD(seq id no:13)   CCCCTTCACCCAACATGTTTACAATCAACAATGAGACTGGTGACATCATCACAGTGGCAG 1208
R-CAD(seq id no:14)   GCCCGTCCCAGAATATGTTCACCATCAACAGCGAGACTGGAGATATCGTCACAGTGGCGG 1047
M-CAD(seq id no:15)   CCCCGAGC-------TCTTCAGCATCGACGAGCTCACAGGAGAGATCCGCACAGTGCAAG 723
K-CAD(seq id no:16)   CCCTAT-----------TTTTCAGTTGAATCAGAAACAGGTATTATCAAGACAGCTTTGC 990
CAD12(seq id no:17)   CCTTAT-----------TTCTCTATTGATCCCAAGACAGGTGTTATTAGAACAGCTTTGC 760
CAD8(seq id no:18)    CCTTAT-----------TTTTCCATTGAGCCTGAAACAGCTATTATAAAAACTGCCCTTC 673
OB-CAD(seq id no:19)  CCCTAT-----------TTTTCGGTGGAAGCACAGACAGGTATCATCAGAACAGCCCTAC 819
VE-CAD(seq id no:20)  GAGTAT-----------TTTGCCATCGATAATTCTGGACGTATTATCACAATAAC---GA 756
                                       **     *  *                ** 

P-CAD(seq id no:11)   GTGGCCTGGACCGGGAAAAAGTCCCTGAGTACACACTGACCATCCAGGCCACAGACATGG 980
E-CAD(seq id no:12)   CTGGGCTGGACCGAGAGAGTTTCCCTACGTATACCCTGGTGGTTCAAGCTGCTGACCTTC 1175
N-CAD(seq id no:13)   CTGGACTTGATCGAGAAAAAGTGCAACAGTATACGTTAATAATTCAAGCTACAGACATGG 1268
R-CAD(seq id no:14)   CTGGCCTGGACCGAGAGAAAGTTCAGCAGTACACAGTCATCGTTCAGGCCACAGATATGG 1107
M-CAD(seq id no:15)   TGGGGCTGGACCGCGAGGTGGTCGCGGTGTACAATCTGACCCTGCAGGTGGCGGACATGT 783
K-CAD(seq id no:16)   TCAACATGGATCGAGAAAACAGGGAGCAGTACCAAGTGGTGATTCAAGCCAAGGATATGG 1050
CAD12(seq id no:17)   CAAACATGGACAGAGAAGTCAAAGAACAATATCAAGTACTCATCCAAGCCAAGGATATGG 820
CAD8(seq id no:18)    CCAACATGGACAGAGAAGCCAAGGAGGAGTACCTGGTTGTTATCCAAGCCAAAGATATGG 733
OB-CAD(seq id no:19)  CCAACATGGACAGGGAGGCCAAGGAGGAGTACCACGTGGTGATCCAGGCCAAGGACATGG 879
VE-CAD(seq id no:20)  AAAGCTTGGACCGAGAGAAGCAGGCCAGGTATGAGATCGTGGTGGAAGCGCGAGATGCCC 816
                            * **  * **             **     *     *  * *     **

P-CAD(seq id no:11)   ATGGGGAC---------GGCTCCACCACCACGGCAGTGGCAGTAGTGGAGATCCTTGATG 1031
E-CAD(seq id no:12)   AAGGTGAG---------GGGTTAAGCACAACAGCAACAGCTGTGATCACAGTCACTGACA 1226
N-CAD(seq id no:13)   AAGGCAATCCCACATATGGCCTTTCAAACACAGCCACGGCCGTCATCACAGTGACAGATG 1328
R-CAD(seq id no:14)   AAGGAAATCTCAACTATGGCCTCTCAAACACAGCCACAGCCATCATCACGGTGACAGATG 1167
M-CAD(seq id no:15)   CTGGAGAC---------GGCCTCACAGCCACTGCCTCAGCCATCATCACCCTTGATGACA 834
K-CAD(seq id no:16)   GCGGCCAGATGG---GAGGATTATCTGGGACCACCACCGTGAACATCACACTGACTGATG 1107
CAD12(seq id no:17)   GAGGACAGCTTG---GAGGATTAGCCGGAACAACAATAGTCAACATCACTCTCACCGATG 877
CAD8(seq id no:18)    GTGGACACTCTG---GTGGCCTGTCTGGGACCACGACACTTACAGTGACTCTTACTGATG 790
OB-CAD(seq id no:19)  GTGGACATATGG---GCGGACTCTCAGGGACAACCAAAGTGACGATCACACTGACCGATG 936
VE-CAD(seq id no:20)  AGGGCC-TCCGG---GGGGACT--CGGGCACGGCCACCGTGCTGGTCACTCTGCAAGACA 870
                        **             **          **  *           *     *    **
```

Fig. 3d

```
P-CAD(seq id no:11)   CCAATGACAATGCTCCCATGTTTGACCCCCAGAAGTACGAGGCCCATGTGCCTGAGAA-- 1089
E-CAD(seq id no:12)   CCAACGATAATCCTCCGATCTTCAATCCCACCACGTACAAGGGTCAGGTGCCTGAGAA-- 1284
N-CAD(seq id no:13)   TCAATGACAATCCTCCAGAGTTTACTGCCATGACGTTTTATGGTGAAGTTCCTGAGAA-- 1386
R-CAD(seq id no:14)   TGAATGACAACCCGCCAGAATTTACCGCCAGCACGTTTGCAGGGGAGGTCCCCGAAAA-- 1225
M-CAD(seq id no:15)   TCAATGACAATGCCCCCGAGTTCACCAGGGATGAGTTCTTCATGGAGGCCATAGAGGC-- 892
K-CAD(seq id no:16)   TCAACGACAACCCTCCCCGATTCCCCCAGAGTACATACCAGTTTAAAACTCCTGAATCTT 1167
CAD12(seq id no:17)   TCAATGACAATCCACCTCGATTCCCCAAAAGCATCTTCCACTTGAAAGTTCCTGAGTCTT 937
CAD8(seq id no:18)    TTAATGACAATCCTCCAAAATTTGCACAGAGCCTGTATCACTTCTCAGTACCGGAAGATG 850
OB-CAD(seq id no:19)  TCAATGACAACCCACCAAAGTTTCCGCAGAGGCTATACCAGATGTCTGTGTCAGAAGCAG 996
VE-CAD(seq id no:20)  TCAATGACAACTTCCCCTTCTTCACCCAGACCAAGTACACATTTGTCGTGCCTGAAGACA 930
                        ** ** **    **    **             *                 **

P-CAD(seq id no:11)   -TGCAGTGGGCCATGAGGTGCAGAGGCTGACGGTCACTGATCTGGACGCCCCCAACTCAC 1148
E-CAD(seq id no:12)   -CGAGGCTAACGTCGTAATCACCACACTGAAAGTGACTGATGCTGATGCCCCCAATACCC 1343
N-CAD(seq id no:13)   -CAGGGTAGACATCATAGTAGCTAATCTAACTGTGACCGATAAGGATCAACCCCATACAC 1445
R-CAD(seq id no:14)   -CCGCGTGGAGACCGTGGTCGCAAACCTCACGGTGATGGACCGAGATCAGCCCCACTCTC 1284
M-CAD(seq id no:15)   -CGTCAGCGGAGTGGATGTGGGACGCCTGGAAGTGGAGGACAGGGACCTGCCAGGCTCCC 951
K-CAD(seq id no:16)   CTCCACCGGGGACACCAATTGGCAGAATCAAAGCCAGCGACGCTGATGTGGGAGA----- 1222
CAD12(seq id no:17)   CCCCTATTGGTTCAGCTATTGGAAGAATAAGAGCTGTGGATCCTGATTTTGGACA----- 992
CAD8(seq id no:18)    TGGTTCTTGGCACTGCAATAGGAAGGGTGAAGGCCAATGATCAGGATATTGGTGA----- 905
OB-CAD(seq id no:19)  CCGTCCCTGGGGAGGAAGTAGGAAGAGTGAAAGCTAAAGATCCAGACATTGGAGA----- 1051
VE-CAD(seq id no:20)  CCCGTGTGGGCACCTCTGTGGGCTCTCTGTTTGTTGAGGACCCAGATGAGCCCCA----- 985
                                        *        *    *     **    **

P-CAD(seq id no:11)   CAGCGTGGCGTGCCACCTACCTTATCATGGGCGGTGACGACGGGGACCATTTTACCATCA 1208
E-CAD(seq id no:12)   CAGCGTGGGAGGCTGTATACACCATATTGAATGATGATGGTGGA---CAATTTGTCGTCA 1400
N-CAD(seq id no:13)   CAGCCTGGAACGCAGTGTACAGAATCAGTGGCGGAGATCCTACTGGACGGTTCGCCATCC 1505
R-CAD(seq id no:14)   CAAACTGGAATGCCGTTTACCGCATCATCAGTGGGGATCCATCCGGGCACTTCAGCGTCC 1344
M-CAD(seq id no:15)   CAAACTGGGTGGCCAGGTTCACCATCCTGGAAGGCGACCCCGATGGGCAGTTCACCATCC 1011
K-CAD(seq id no:16)   -AAATGCTGAAATTGAGTACAGCATCACAGACGGTGAGGGGCTGGATATGTTTGATGTCA 1281
CAD12(seq id no:17)   -AAATGCAGAAATTGAATACAATATTGTTCCAGGAGATGGGGAAATTTGTTTGACATCG 1051
CAD8(seq id no:18)    -AAATGCACAGTCATCATATGATATCATCGATGGAGATGGAACAGCACTTTTTGAAATCA 964
OB-CAD(seq id no:19)  -AAATGGCTTAGTCACATACAATATTGTTGATGGAGATGGTATGGAATCGTTTGAAATCA 1110
VE-CAD(seq id no:20)  -GAACCGGATGACCAAGTACAGCATCTTGCGGGGCGACTACCAGGACGCTTTCACCATTG 1044
                                       *     **       *  **             **     *

P-CAD(seq id no:11)   CCACCCACCCTGAGAGCAACCAGGGCATCCTGACAACCAGGAAGGGTTTGGATTTTGAGG 1268
E-CAD(seq id no:12)   CCACAAATCCAGTGAACAACGATGGCATTTTGAAAACAGCAAAGGCTTCCATTTTGAGG 1460
N-CAD(seq id no:13)   AGACCGACCCAAACAGCAACGACGGGTTAGTCACCGTGGTCAAACCAATCGACTTTGAAA 1565
R-CAD(seq id no:14)   GCACAGACCCCGTAACCAACGAGGGCATGGTCACCGTGGTGAAGGCAGTCGACTACGAGC 1404
M-CAD(seq id no:15)   GCACGGACCCCAAGACCAACGAGGGTGTTCTGTCCATTGTGAAGGCCCTGGACTATGAGA 1071
K-CAD(seq id no:16)   TCACCGACCAGGAAACCCAGGAAGGGATTATAACTGTCAAAAAGCTCTTGGACTTTGAAA 1341
CAD12(seq id no:17)   TCACAGATGAGGATACACAAGAGGGAGTCATCAAATTGAAAAAGCCTTTAGATTTTGAAA 1111
CAD8(seq id no:18)    CTTCTGATGCCCAGGCCCAGGATGGCATTATAAGGCTAAGAAAACCTCTGGACTTTGAGA 1024
OB-CAD(seq id no:19)  CAACGGACTATGAAACACAGGAGGGGGTGATAAAGCTGAAAAAGCCTGTAGATTTTGAAA 1170
VE-CAD(seq id no:20)  AGACAAACCCCGCCCACAACGAGGGCATCATCAAGCCCATGAAGCCTCTGGATTATGAAT 1104
                         *  *           *  * **  *  *          **     * ** * **

P-CAD(seq id no:11)   CCAAAAACCAGCACACCCTGTACGTTGAAGTGACCAACG---AGGCCCCTTT------TG 1319
E-CAD(seq id no:12)   CCAAGCAGCAGTACATTCTACACGTAGCAGTGACGAATG---TGGTACCTTT------TG 1511
N-CAD(seq id no:13)   CAAATAGGATGTTTGTCCTTACTGTTGCTGCAGAAAATC---AAGTGCCATTAGCCAAGG 1622
R-CAD(seq id no:14)   TCAACAGAGCTTTCATGCTGACAGTGATGGTGTCCAACC---AGGCGCCCCTGGCCAGCG 1461
M-CAD(seq id no:15)   GCTGTGAACACTACGAACTCAAAGTGTCGGTGCAGAATG---AGGCCCCGCTGCAGGCGG 1128
K-CAD(seq id no:16)   AGAAGAAAGTGTATACCCTTAAAGTGGAAGCCTCCAATCCTTATGTTGAGCCACGATTTC 1401
CAD12(seq id no:17)   CAAAGAAGGCATACACTTTCAAAGTTGAGGCTTCCAACCTTCACCTTGACCACCGGTTTC 1171
CAD8(seq id no:18)    CCAAAAAATCCTATACGCTAAAGGATGAGGCAGCCAATGTCCATATTGACCCACGCTTCA 1084
OB-CAD(seq id no:19)  CCGAAAGAGCCTATAGCTTGAAGGTAGAGGCAGCCAACGTGCACATCGACCCGAAGTTTA 1230
VE-CAD(seq id no:20)  ACATCCAGCAATACAGCTTCATCGTCGAGGCCACAGACCCCACCATCGACCTCCGATACA 1164
                                        *    *     *      *

P-CAD(seq id no:11)   TGCTGAAGCTCCCAACC---TCCACAGCCACCATAGTGGTCCACGTGGAGGATGTGAATG 1376
E-CAD(seq id no:12)   AGGTCTCTCTCACCACC---TCCACAGCCACCGTCACCGTGGATGTGCTGGATGTGAATG 1568
N-CAD(seq id no:13)   GAATTCAGCACCCGCCTCAGTCAACTGCAACCGTGTCTGTTACAGTTATTGACGTAAATG 1682
R-CAD(seq id no:14)   GAATCCAGATGTCCTTCCAGTCCACGGCAGGGGTGACCATCTCCATCATGGACATCAACG 1521
M-CAD(seq id no:15)   CTGCCCTTAGGGCTGAGCGGGGCCAGGCCAAGGTCCGCGTGCATGTGCAGGACACCAACG 1188
K-CAD(seq id no:16)   TCTACTTGGGGCCTTTCAAAGATTCAGCCACGGTTAGAATTGTGGTGGAGGATGTAGATG 1461
CAD12(seq id no:17)   ACTCGGCGGGCCCTTTCAAAGACACAGCTACGGTGAAGATCAGCGTGCTGGACGTAGATG 1231
CAD8(seq id no:18)    GTGGCAGGGGGCCCTTTAAAGACACGGCGACAGTCAAAATCGTGGTTGAAGATGCTGATG 1144
OB-CAD(seq id no:19)  TCAGCAATGGCCCTTTCAAGGACACTGTGACCGTCAAGATCTCAGTAGAAGATGCTGATG 1290
VE-CAD(seq id no:20)  TGAGCCC---TCCCGCGGGAAACAGAGCCCAGGTCATTATCAACATCACAGATGTGGACG 1221
                                  *             *      *     *     *    **     * *
```

Fig. 3e

```
P-CAD(seq id no:11)     AGGCACCTGTGTTTGTCCCACCCTCCAAAGTCGTTGAGGTCCAGGAGGGCATCCCCACTG 1436
E-CAD(seq id no:12)     AAGCCCCCATCTTTGTGCCTCCTGAAAAGAGAGTGGAAGTGTCCGAGGACTTTGGCGTGG 1628
N-CAD(seq id no:13)     AAAACCCTTATTTTGCCCCCAATCCTAAGATCATTCGCCAAGAAGAAGGGCTTCATGCCG 1742
R-CAD(seq id no:14)     AGGCTCCCTACTTCCCCTCAAACCACAAGCTGATCCGCCTGGAGGAGGGCGTGCCCCCCG 1581
M-CAD(seq id no:15)     AGCCCCCCGTGTTCCAGGAGAACCCACTTCGGACCAGCCTAGCAGAGGGGGCACCCCCAG 1248
K-CAD(seq id no:16)     AGCCACCTGTCTTCAGCAAACTGGCCTACATCTTACAAATAAGAGAAGATGCTCAGATAA 1521
CAD12(seq id no:17)     AGCCACCGGTTTTCAGCAAGCCGCTCTACACCATGGAGGTTTATGAAGACACTCCGGTAG 1291
CAD8(seq id no:18)      AGCCTCCGGTCTTCTCTTCACCGACTTACCTACTTGAAGTTCATGAAAATGCTGCTCTAA 1204
OB-CAD(seq id no:19)    AGCCCCCTATGTTCTTGGCCCCAAGTTACATCCACGAAGTCCAAGAAAATGCAGCTGCTG 1350
VE-CAD(seq id no:20)    AGCCCCCCATTTTCCAGCAGCCTTTCTACCACTTCCAGCTGAAGGAAAAC---CAGAAGA 1278
                        *    **    **                               **

P-CAD(seq id no:11)     GGGAGCCTGTGTGTGTCTACACTGCAGAAGACCCTGACAAG---GAGAATCAAAAGATCA 1493
E-CAD(seq id no:12)     GCCAGGAAATCACATCCTACACTGCCCAGGAGCCAGACACATTTATGGAACAGAAAATAA 1688
N-CAD(seq id no:13)     GTACCATGTTGACAACATTCACTGCTCAGGACCCAGATCGATATATGCAGCAAAATATTA 1802
R-CAD(seq id no:14)     GCACCGTGCTGACCACGTTTTCAGCTGTGGACCCTGACCGGTTCATGCAGCAGGCTGTGA 1641
M-CAD(seq id no:15)     GCACTCTGGTGGCCACCTTCTCTGCCCGGGACCCTGACACAGAGCAGCTGCAGAGGCTCA 1308
K-CAD(seq id no:16)     ACACCACAATAGGCTCCGTCACAGCCCAAGATCCAGATGCTGCCAGGAATCCTGTCAAGT 1581
CAD12(seq id no:17)     GGACCATCATTGGCGCTGTCACTGCTCAAGACCTGGATGTAGGCAGCGGTGCTGTTAGGT 1351
CAD8(seq id no:18)      ACTCCGTGATTGGGCAAGTGACTGCTCGTGACCCTGATATCACTTCCAGTCCTATAAGGT 1264
OB-CAD(seq id no:19)    GCACCGTGGTTGGGAGAGTGCATGCCAAAGACCCTGATGCTGCCAACAGCCCGATAAGGT 1410
VE-CAD(seq id no:20)    AGCCTCTGATTGGCACAGTGCTGGCCATGGACCCTGATGCGGCTAGGCATAGCATTGGAT 1338
                                 *             **    ** *  **

P-CAD(seq id no:11)     GCTACCGCATCCTG---AGAGACCCAGCAGGGTGGCTAGCCATGGACCCAGACAGTGGGC 1550
E-CAD(seq id no:12)     CATATCGGATTTGG---AGAGACACTGCCAACTGGCTGGAGATTAATCCGGACACTGGTG 1745
N-CAD(seq id no:13)     GATACACTAAATTA---TCTGATCCTGCCAATTGGCTAAAAATAGATCCTGTGAATGGAC 1859
R-CAD(seq id no:14)     GATACTCAAAGCTG---TCAGACCCAGCGAGCTGGCTGCACATCAATGCCACCAACGGCC 1698
M-CAD(seq id no:15)     GCTACTCCAAGGAC---TACGACCCGGAAGACTGGCTGCAAGTGGACGCAGCCACTGGCC 1365
K-CAD(seq id no:16)     ACTCTGTAGATCGACACACAGATATGGACAGAATATTCAACATTGATTCTGGAAATGGTT 1641
CAD12(seq id no:17)     ACTTCATAGATTGGAAGAGTGATGGGGACAGCTACTTTACAATAGATGGAAATGAAGGAA 1411
CAD8(seq id no:18)      TTTCCATCGACCGGCACACTGACCTGGAGAGGCAGTTCAACATTAATGCAGACGATGGGA 1324
OB-CAD(seq id no:19)    ATTCCATCGATCGTCACACTGACCTCGACAGATTTTTCACTATTAATCCAGAGGATGGTT 1470
VE-CAD(seq id no:20)    ACTCCATCCGCAGGACCAGTGACAAGGGCCAGTTCTTCCGAGTCA---CAAAAAAGGGGG 1395
                          *                 **    *         *     *             **

P-CAD(seq id no:11)     AGGTCACAGCTGTGGGCACCCTCGACCGTGAGGATGAGCAGTTTGTGAGGAACAACATCT 1610
E-CAD(seq id no:12)     CCATTTCCACTCGGGCTGAGCTGGACAGGGAGGATTTTGAGCACGTGAAGAACACCACGT 1805
N-CAD(seq id no:13)     AAATAACTACAATTGCTGTTTTGGACCGAGAA---TCACCAAATGTGAAAAACAATATAT 1916
R-CAD(seq id no:14)     AGATCACCACGGCGGCAGTGCTGGACCGTGAG---TCCCTCTACACCAAAAACAACGTCT 1755
M-CAD(seq id no:15)     GGATCCAGACCCAGCACGTGCTCAGCCCGGCG---TCCCCCTTCCTCAAGGGCGGCTGGT 1422
K-CAD(seq id no:16)     CGATTTTTACATCGAAACTTCTTGACCGAGAAA---CACTGCTATGGCACAACATTACAG 1698
CAD12(seq id no:17)     CCATCGCCACTAATGAATTACTAGACAGAGAAA--GCACTGC-GCAGTATAATTTCTCCA 1468
CAD8(seq id no:18)      AGATAACGCTGGCAACACCACTTGACAGAGAAT--TAAGTGT-ATGGCACAACATAACAA 1381
OB-CAD(seq id no:19)    TTATTAAAACTACAAAACCTCTGGATAGAGAGG--AAACAGC-CTGGCTCAACATCACTG 1527
VE-CAD(seq id no:20)    ACATTTACAATGAGAAAGAACTGGACAGAGAAG--TCTACCC-CTGGTATAACCTGACTG 1452
                           *                 *       *

P-CAD(seq id no:11)     ATGAAGTCATGGTCTTGGCCATGGACAATGGAAGCCCTCCCACCACTG-GCACGGGAACC 1669
E-CAD(seq id no:12)     ACACAGCCCTAATCATAGCTACAGACAATGGTTCTCCAGTTGCTACTG-GAACAGGGACA 1864
N-CAD(seq id no:13)     ATAATGCTACTTTCCTTGCTTCTGACAATGGAATTCCTCCTATGAGTG-GAACAGGAACG 1975
R-CAD(seq id no:14)     ACGAGGCCACCTTCCTGGCAGCTGACAATGGGATACCCCCGGCCAGCG-GCACCGGGACC 1814
M-CAD(seq id no:15)     ACAGAGCCATCGTCCTGGCCCAGGATGACGCCTCCCAGCCCCGCACCG-CCACCGGCACC 1481
K-CAD(seq id no:16)     TGATAGCAACAGAGAT---------CAATAATCCAAAGCAAAGTAG----TCGAGTACCT 1745
CAD12(seq id no:17)     TAATTGCGAGTAAAGT---------TAGTAACCCTTTATTGACCAG----CAAAGTCAAT 1515
CAD8(seq id no:18)      TCATTGCTACTGAAAT---------TAGGAACCACAGTCAGATATC----ACGAGTACCT 1428
OB-CAD(seq id no:19)    TCTTTGCAGCAGAAAT---------CCACAATCGGCATCAGGAAGC----CCAAGTCCCA 1574
VE-CAD(seq id no:20)    TGGAGGCCAAAGAACTGGATTCC-ACTGGAACCCCCACAGGAAAAGAATCCATTGTGCAA 1511
                             *         *                                      *

P-CAD(seq id no:11)     CTTCTGCTAACACTGATTGATGTCAATGACCATGGCCCAGTCCCTG---AGCCCCGTCAG 1726
E-CAD(seq id no:12)     CTTCTGCTGATCCTGTCTGATGTGAATGACAACGCCCCCATACCAG---AACCTCGAACT 1921
N-CAD(seq id no:13)     CTGCAGATCTATTTACTTGATATTAATGACAATGCCCCTCAAGTGT---TACCTCAAGAG 2032
R-CAD(seq id no:14)     CTCCAGATCTATCTCATTGACATCAACGACAACGCCCCTGAGCTGC---TGCCCAAGGAG 1871
M-CAD(seq id no:15)     CTGTCCATCGAGATCCTGGAGGTGAACGACCATGCACCTGTGCTGG---CCCCGCCGCCG 1538
K-CAD(seq id no:16)     CTATATATTAAAGTTCTAGATGTCAATGACAACGCCCCAGAATTTGCTGAGTTCTATGAA 1805
CAD12(seq id no:17)     ATACTGATTAATGTCTTAGATGTAAATGAATTTCCTCCAGAAATATCTGTGCCATATGAG 1575
CAD8(seq id no:18)      GTTGCTATTAAAGTGCTGGATGTCAATGACAACGCCCCTGAATTCGCATCCGAATATGAG 1488
OB-CAD(seq id no:19)    GTGGCCATTAGGGTCCTTGATGTCAACGATAATGCTCCCAACTTTGCTGCCCCTTATGAA 1634
VE-CAD(seq id no:20)    GTCCACATTGAAGTTTTGGATGAGAATGACAATGCCCCGGAGTTTGCCAAGCCCTACCAG 1571
                         *     *     *    **    ** **       **
```

Fig. 3f

```
P-CAD(seq id no:11)           ATCACCA-TCTGCAACCAAA----------GCC-----CTGTGCGCCAGGTGCTGAACAT 1770
E-CAD(seq id no:12)           ATATTCT-TCTGTGAGAGGA----------ATC-----CAAAGCCTCAGGTCATAAACAT 1965
N-CAD(seq id no:13)           GCAGAGA-CTTGCGA---AA----------CTC-----CAGACCCCAATTCAATTAATAT 2073
R-CAD(seq id no:14)           GCGCAGA-TCTGCGA---GA----------AGC-----CCAACCTGAACGCCATCAACAT 1912
M-CAD(seq id no:15)           CCGGGCAGCCTGTGCAGCGA----------GCCACA--CCAAGGCCCAGGCCTCCTCCTG 1586
K-CAD(seq id no:16)           ACTTTTG-TCTGTGAAAAAG------CAAAGGCA------GATCAGTTGATTCAGACCCT 1852
CAD12(seq id no:17)           ACAGCCG-TGTGTGAAAATG------CCAAGCCA------GGACAGATAATTCAGATAGT 1622
CAD8(seq id no:18)            GCATTTT-TATGTGAAAATG------GAAAACCC------GGCCAAGTCATTCAAACTGT 1535
OB-CAD(seq id no:19)          GGTTTCA-TCTGTGAGAGTGATCAGACCAAGCCACTTTCCAACCAGCCAATTGTTACAAT 1693
VE-CAD(seq id no:20)          CCCAAAG-TGTGTGAGAACG-------CTGTCCAT-----GGCCAGCTGGTCCTGCAGAT 1618
                                        **                    *

P-CAD(seq id no:11)           CAC------GGACAAGGACCTGTCTCCCCACACCTCCCCTTTCCAGGCCCAGCTCACAGA 1824
E-CAD(seq id no:12)           CAT------TGATGCAGACCTTCCTCCCAATACATCTCCCTTCACAGCAGAACTAACACA 2019
N-CAD(seq id no:13)           TACAGCACTTGATTATGACATTGATCCAAATGCTGGACCATTTGCTTTTGATCTTCCTTT 2133
R-CAD(seq id no:14)           CACGGCGGCCGACGCTGACGTCGACCCCAACATCGGCCCCTACGTCTTCGAGCTGCCCTT 1972
M-CAD(seq id no:15)           GGCGCCA-CGGATGAGGACCTGCCCCCCCACGGGGCCCCCTTCCACTTCCAGCTGAGCCC 1645
K-CAD(seq id no:16)           GCATGCTGTTGACAAGGATGACCCTTATAGTGGACACCAATTTTCGTTTTCCTTGGCCCC 1912
CAD12(seq id no:17)           CAGTGCTGCAGACCGAGATCTTTCACCTGCTGGGCAACAATTCTCCTTTAGATTATCACC 1682
CAD8(seq id no:18)            TAGCGCCATGGACAAAGATGATCCCAAAAACGGACATTATTTCTTATACAGTCTCCTTCC 1595
OB-CAD(seq id no:19)          TAGTGCAGATGACAAGGATGACACGGCCAATGGACCAAGATTTATCTTCAGCCTACCCCC 1753
VE-CAD(seq id no:20)          CTCCGCAATAGACAAGGACATAACACCACGAAACGTGAAGTTCAAATTCACCTTGAATAC 1678
                                        **    **                      *            *

P-CAD(seq id no:11)           TGACTCAGACATC------TACTGGACGGCAGAGGTCAACG---AGGAAGGT---GACAC 1872
E-CAD(seq id no:12)           CGGGGCGAGTGCC------AACTGGACCATTCAGTACAACG---ACCCAACCCAAGAATC 2070
N-CAD(seq id no:13)           ATCTCCAGTGACT------ATTAAGAGAAATTGGACCATCACTCGGCTTAATGGTGATTT 2187
R-CAD(seq id no:14)           TGTCCCGGCGGCC------GTGCGGAAGAACTGGACCATCACCCGCCTGAACGGTGACTA 2026
M-CAD(seq id no:15)           CAGGCTCCCAGAG------CTCGGCCGGAACTGGAGCCTCAGCCAGGTCAACGTGAGCCA 1699
K-CAD(seq id no:16)           TGAAGCAGCCAGTGGCTCAAACTTTACCATTCAAGACAACAA-AGACAACACGGCGGGAA 1971
CAD12(seq id no:17)           TGAGGCTGCTATCAAACCAAATTTTACAGTTCGTGACTTCAG-AAACAACACAGCGGGGA 1741
CAD8(seq id no:18)            AGAAATGGTCAACAATCCGAATTTCACCATCAAGAAAAATGA-AGATAATTCCCTCAGTA 1654
OB-CAD(seq id no:19)          TGAAATCATTCACAATCCAAATTTCACAGTCAGAGACAACCG-AGATAACACAGCAGGCG 1812
VE-CAD(seq id no:20)          TGAGAAC------------AACTTTACCCTCACGGATAATCA-CGATAACACGGCCAACA 1725

P-CAD(seq id no:11)           AGTGGTCTTGTCCCTGAAGAA---GTTCCTGAAGCAGGATAC--ATATGACGTGCACCTT 1927
E-CAD(seq id no:12)           TATCATTTTGAAGCCAAAGAT---GGCCTTAGAGGTGGGTGA--CTACAAAATCAATCTC 2125
N-CAD(seq id no:13)           TGCTCAGCTTAATTTAAAGATAAAATTTCTTGAAGCTGGTAT--CTATGAAGTTCCCATC 2245
R-CAD(seq id no:14)           TGCCCAACTCAGCTTGCGCATCCTGTACCTGGAGGCCGGGAT--GTATGACGTCCCCATC 2084
M-CAD(seq id no:15)           CGCGCGCCTGCGGCCGCGACACCAGGTCCCCGAA---GGCCT--GCACCGCCTCAGCCTG 1754
K-CAD(seq id no:16)           TCTTAACTCGGAAAAATGGCTATAATAG-ACACGAGATGAGCACCTATCTCTTGCCTGTG 2030
CAD12(seq id no:17)           TTGAAACCCGAAGAAATGGATACAGCCGCAGGCAGCAAGAGT-TGTATTTCCTCCCTGTT 1800
CAD8(seq id no:18)            TTTTGGCAAAGCATAATGGATTCAACCGCCAGAAGCAAGAAG-TCTATCTTTTACCAATC 1713
OB-CAD(seq id no:19)          TGTACGCCCGGCGTGGAGGGTTCAGTCGGCAGAAGCAGGACT-TGTACCTTCTGCCCATA 1871
VE-CAD(seq id no:20)          TCACAGTCAAGTATGGGCAGTTTGACCGGGAGCATACCAAGG-TCCACTTCCTACCCGTG 1784
                                                                            *     *     *

P-CAD(seq id no:11)           TCTCTGTCTGACCATGGCAA------CAAAGAGCAGCTGACGGTGATCAGGGCCACTGTG 1981
E-CAD(seq id no:12)           AAGCTCATGGATAACCAGAA------TAAAGACCAAGTGACCACCTTAGAGGTCAGCGTG 2179
N-CAD(seq id no:13)           ATAATCACAGATTCGGGTAATCCTCCCAAATCAAATATTTCCATCCTGCGCGTGAAGGTT 2305
R-CAD(seq id no:14)           ATCGTCACAGACTCTGGAAACCCTCCCCTGTCCAACACGTCCATCATCAAAGTCAAGGTG 2144
M-CAD(seq id no:15)           CTGCTCCGGGACTCGGGGCAGCCGCCCCAGCAGCGCGAGCAGCCTCTGAACGTGACCGTG 1814
K-CAD(seq id no:16)           GTCATTTCAGACAACGACTACCCAGTTCAAAGCAGCACTGGGACAGTGACTGTCCGGGTC 2090
CAD12(seq id no:17)           GTAATAGAAGACAGCAGCTACCCTGTCCAGAGCAGCACAAACACAATGACTATTCGAGTC 1860
CAD8(seq id no:18)            ATAATCAGTGATAGTGGAAATCCTCCACTGAGCAGCACTAGCACCTTGACAATCAGGGTC 1773
OB-CAD(seq id no:19)          GTGATCAGCGATGGCGGCATCCCGCCCATGAGTAGCACCAACACCCTCACCATCAAAGTC 1931
VE-CAD(seq id no:20)          GTCATCTCAGACAATGGGATGCCAAGTCGCACGGGCACCAGCACGCTGACCGTGGCCGTG 1844
                                  *    **                                   *          **

P-CAD(seq id no:11)           TGCGACTGCCATGGCCATGTCGAAACCTGC-------CCTGGACCCTGGAAGGGAGG--- 2031
E-CAD(seq id no:12)           TGTGACTGTGAAGGGGCCGCCGGCGTCTGTAGGAAGGCACAGCCTGTCGAAGCAGGA--- 2236
N-CAD(seq id no:13)           TGCCAGTGTGACTCCAACGGGGACTGCACAGATGTGGACAGGATTGTGGGTGCGGGG--- 2362
R-CAD(seq id no:14)           TGCCCATGTGATGACAACGGGGACTGCACCACCATTGGCGCAGTGGCAGCGGCTGGT--- 2201
M-CAD(seq id no:15)           TGCCGCTGCGGCAAGGACGGCGTCTGCCTGCCGGGGGCCGCAGCGCTGCTGGCGGGGGGC 1874
K-CAD(seq id no:16)           TGTGCATGTGACCACCACGGGAACATGCAATCCTGCCATGCGGAGGCGCTCATCCACCCC 2150
CAD12(seq id no:17)           TGTAGATGTGACTCTGATGGCACCATCCTGTCTTGTAATGTGGAAGCAATTTTTCTACCT 1920
CAD8(seq id no:18)            TGTGGCTGCAGCAATGACGGTGTCGTCCAGTCTTGCAATGTCGAAGCTTATGTCCTTCCA 1833
OB-CAD(seq id no:19)          TGCGGGTGCGACGTGAACGGGGCACTGCTCTCCTGCAACGCAGAGGCCTACATTCTGAAC 1991
VE-CAD(seq id no:20)          TGCAAGTGCAACGAGCAGGGCGAGTTCACCTTCTGC------GAGGATATGGCCGCCCAG 1898
                              **    **          *
```

Fig. 3g

```
P-CAD(seq id no:11)     ------TTTCATCCTCC--CTGTGCTGGGGGCT---------GTCCTGGCTCTGCTGTTC 2074
E-CAD(seq id no:12)     ------TTGCAAATTCCTGCCATTCTGGGGATTCTTGGAGGAATTCTTGCTTTGCTAATT 2290
N-CAD(seq id no:13)     ------CTTGGCACCGGTGCCATCATTGCCATCCTGCTCTGCATCATCATCCTGCTTATC 2416
R-CAD(seq id no:14)     ------CTGGGCACCGGTGCCATCGTGGCCATCCTCATCTGCATCCTCATCCTGCTGACC 2255
M-CAD(seq id no:15)     ACAGGCCTCAGCCTGGGCGCACTGGTCATCGTGCTGGCCAGCGCCCTCCTGCTGCTGGTG 1934
K-CAD(seq id no:16)     ACGGGACTGAGCACGGGGGCTCTGGTTGCCATCCTTCTGTGCATCGTGATCCTACTAGTG 2210
CAD12(seq id no:17)     GTAGGACTTAGCACTGGGGCGTTGATTGCAATTCTACTATGCATTGTTATACTCTTAGCC 1980
CAD8(seq id no:18)      ATTGGACTCAGTATGGGCGCCTTAATTGCCATATTAGCATGCATCATTTTGCTGTTAGTC 1893
OB-CAD(seq id no:19)    GCCGGCCTGAGCACAGGCGCCCTGATCGCCATCCTCGCCTGCATCGTCATTCTCCTGGTC 2051
VE-CAD(seq id no:20)    GTGGGCGTGAGCATCCAGGCAGTGGTAGCCATCTTACTCTGCATCCTCACCATCACAGTG 1958
                               *           *  *  *                    *     *

P-CAD(seq id no:11)     CTCCTGCTGGTGCTGCTTTTGTTGGTGAGA---------AAGAAGCGGAAGATCAAGGAG 2125
E-CAD(seq id no:12)     CTGATTCTGCTGCTCTTGCTGTTTCTTCGG---------AGGAGAGCGGTGGTCAAAGAG 2341
N-CAD(seq id no:13)     CTTGTGCTGATGTTTGTGGTATGGATGAAACGCCGGGATAAAGAACGCCAGGCCAAACAA 2476
R-CAD(seq id no:14)     ATGGTCCTGCTGTTTGTCATGTGGATGAAGCGGCGAGAGAAGGAGCGCCACACGAAGCAG 2315
M-CAD(seq id no:15)     CTGGTCCTGCTCGTGGCACTCCGGGCGCGGTTCTGG---AAGCAGTCTCGGGGCAAGGGG 1991
K-CAD(seq id no:16)     ACAGTGGTGCTGTTTGCAGCTCTGA---------------GGCGGCAGCGAAAAAAAGAG 2255
CAD12(seq id no:17)     ATAGTTGTACTGTATGTAGCACTGC---------------GAAGGCAGAAGAAAAAGCAC 2025
CAD8(seq id no:18)      ATCGTGGTGCTGTTTGTAACTCTAC---------------GGCGGCATCAAAAAAATGAA 1938
OB-CAD(seq id no:19)    ATTGTAGTATTGTTTGTGACCCTGA---------------GAAGGCA---AAAGAAAGAA 2093
VE-CAD(seq id no:20)    ATCACCCTGCTCATCTTCCTGCGGC---------------GGCGGCTCCGGAAGCAGGCC 2003
                               *  *                                            *

P-CAD(seq id no:11)     CCCCTCCTACTCCC---AGAAGATGACACCCGTGACAACGTCTTCTACTATGGCGAAGAG 2182
E-CAD(seq id no:12)     CCCTTACTGCCCCC---AGAGGATGACACCCGGGACAACGTTTATTACTATGATGAAGAA 2398
N-CAD(seq id no:13)     CTTTTAATTGATCC---AGAAGATGATGTAAGAGATAATATTTTAAAATATGATGAAGAA 2533
R-CAD(seq id no:14)     CTGCTCATTGACCC---CGAGGACGACGTCCGCGACAACATCCTCAAGTATGACGAGGAA 2372
M-CAD(seq id no:15)     CTGCTGCACGGCCC---CCAGGACGACCTTCGAGACAATGTCCTCAACTACGATGAGCAA 2048
K-CAD(seq id no:16)     CCTTTGATCATTTC---CAAAGAGGACATCAGAGATAACATTGTCAGTTACAACGACGAA 2312
CAD12(seq id no:17)     ACCCTGATGACCTC---TAAAGAAGACATCAGAGACAACGTCATCCATTACGATGATGAA 2082
CAD8(seq id no:18)      CCATTAATTATCAAAGATGATGAAGACGTTCGAGAAAACATCATTCGCTACGATGATGAA 1998
OB-CAD(seq id no:19)    CCACTCATTGTCTTTGAGGAAGAAGATGTCCGTGAGAACATCATTACTTATGATGATGAA 2153
VE-CAD(seq id no:20)    CGCGCGCACGGCAAGAGCGTGCCGGAGATCCACGAGCAGCTGGTCACCTACGACGAGGAG 2063
                                                **       **  *  *       **    **  *

P-CAD(seq id no:11)     GGGGGTGGCGAAGAGGACCAGGAC---TATGACATCACCCAGCTCCA-----CCGAGGTC 2234
E-CAD(seq id no:12)     GGAGGCGGAGAAGAGGACCAGGAC---TTTGACTTGAGCCAGCTGCA-----CAGGGGCC 2450
N-CAD(seq id no:13)     GGTGGAGGAGAAGAAGACCAGGAC---TATGACTTGAGCCAGCTGCAGCAGCCTGACACT 2590
R-CAD(seq id no:14)     GGCGGTGGCGAGGAGGACCAGGAC---TACGACCTCAGCCAGCTGCAGCAGCCGGAAGCC 2429
M-CAD(seq id no:15)     GGAGGCGGGGAGGAGGACCAGGACGCCTACGACATCAGCCAGCTGCGTCA-CCCGACAGC 2107
K-CAD(seq id no:16)     GGTGGTGGAGAGGAGGACACCCAGGCTTTTGATATCGGCACCCTGAGGAATCCTGAAGCC 2372
CAD12(seq id no:17)     GGAGGTGGGGAGGAAGATACCCAGGCTTTCGACATCGGGGCTCTGAGAAACCCAAAAGTG 2142
CAD8(seq id no:18)      GGAGGAGGGGAGGAGGACACAGAGGCTTTTGACATTGCAACTTTACAAAATCCAGATGGA 2058
OB-CAD(seq id no:19)    GGGGGTGGGGAAGAAGACACAGAAGCCTTTGATATTGCCACCCTCCAGAATCCTGATGGT 2213
VE-CAD(seq id no:20)    GGCGGCGGCGAGATGGACACCACCAGCTACGATGTGTCGGTGCTC--AACTCGGTGCGCC 2121
                        ** ** ** **    **          *  **  *        *

P-CAD(seq id no:11)     TG---GAGGCCAGGCCGGAGGTGGTTCTCCGCAA--TGACGT-----GGCACCAACCATC 2284
E-CAD(seq id no:12)     TG---GACGCTCGGCCTGAAGTGACTC---GTAA--CGACGT-----TGCACCAACCCTC 2497
N-CAD(seq id no:13)     GT---GGAGCCTGATGCCATCAAGCCTGTGGGAATCCGACGAATGGATGAAAGACCCATC 2647
R-CAD(seq id no:14)     AT---GGGGCACGTGCCAAGCAAAGCCCCTGGCGTGCGTCGCGTGGATGAGCGGCCGGTG 2486
M-CAD(seq id no:15)     GC---TGAGCCTGCCTCTG---GGACCGCCGCCA--CTTCGCAGAGATGCCCCGCAGGGC 2159
K-CAD(seq id no:16)     ATAGAGGACAACAAATTACGAAG---GGACATTGTGCCCGAAGCCCTTTTCCTACCCCG- 2428
CAD12(seq id no:17)     ATTGAGGAGAACAAAATTCGCAG---GGATATAAAACCAGACTCTCTCTGTTTACCTCG- 2198
CAD8(seq id no:18)      ATTAATGGATTTTTACCCCGTAA---GGATATTAAACCAGATTTGCAGTTTATGCCAAG- 2114
OB-CAD(seq id no:19)    ATCAATGGATTTATCCCCCGCAA---AGACATCAAACCTGAGTATCAGTACATGCCTAG- 2269
VE-CAD(seq id no:20)    GCGGCGGGGCCAAGCCCCCGCGGCCCGCGCTGGACGCCCGGCCTTCCCTCTATGCGCAGG 2181

P-CAD(seq id no:11)     ATCCCGACACCCATGTACCGTCCTCGGCCAGCCA------ACCCAGATGAAATCGGCAAC 2338
E-CAD(seq id no:12)     ATGAGTGTCCCCCGGTATCTTCCCCGCCCTGCCA------ATCCCGATGAAATTGGAAAT 2551
N-CAD(seq id no:13)     CACGCTGAGCCCCAGTATCCGGTCCGATCTGCAGCCCCACACCCTGGAGACATTGGGGAC 2707
R-CAD(seq id no:14)     GGCGCTGAGCCCCAGTACCCGATCAGGCCCATGGTGCCGCACCCAGGCGACATCGGTGAC 2546
M-CAD(seq id no:15)     CGCCTGCACCCCCAGCCACCCCGAGTGCTGCCCACCA---GCCCCCTGGACATCGCCGAC 2216
K-CAD(seq id no:16)     ----------ACGGACTC---CAACAGCTCGCGACAA-------CACCGATGTCAGAGAT 2468
CAD12(seq id no:17)     ----------TCAGAGAC---CACCCATGGAAGATAA-------CACAGACATAAGGGAT 2238
CAD8(seq id no:18)      ----------GCAAGGGCTTGCTCCAGTTCCAAATGG-------TGTTGATGTCGATGAA 2157
OB-CAD(seq id no:19)    ----------ACCTGGGCTCCGGCCAGCGCCCAACAG-------CGTGGATGTCGATGAC 2312
VE-CAD(seq id no:20)    TGCAGAAGCCACCGAGGCACGCGCCTGGGGCACACGGAG-GGCCCGGGGAGATGGCAGCC 2240
                                   *                                    **  *
```

Fig. 3h

```
P-CAD(seq id no:11)           TTTATAATTGAGAACCTGAAGGCGGCTAACACAGACCCCACAGCCCCGCCCTACGACACC 2398
E-CAD(seq id no:12)           TTTATTGATGAAAATCTGAAAGCGGCTGATACTGACCCCACAGCCCCGCCTTATGATTCT 2611
N-CAD(seq id no:13)           TTCATTAATGAGGGCCTTAAAGCGGCTGACAATGACCCCACAGCTCCACCATATGACTCC 2767
R-CAD(seq id no:14)           TTCATCAATGAGGGACTCCGCGCTGCTGACAACGACCCCACGGCACCCCCCTATGACTCC 2606
M-CAD(seq id no:15)           TTCATCAATGATGGCTTGGAGGCTGCAGATAGTGACCCCAGTGTGCCGCCTTACGACACA 2276
K-CAD(seq id no:16)           TTCATTAACCAAAGGTTAAAGGAAAATGACACGGACCCCACTGCCCCGCCATACGACTCC 2528
CAD12(seq id no:17)           TTCATTCATCAAAGGCTACAGGAAAATGATGTAGATCCAACTGCCCCACCAATCGATTCA 2298
CAD8(seq id no:18)            TTTATAAATGTAAGGCTGCATGAGGCAGATAATGATCCCACAGCCCCGCCATATGACTCC 2217
OB-CAD(seq id no:19)          TTCATCAACACGAGAATACAGGAGGCAGACAATGACCCCACGGCTCCTCCTTATGACTCC 2372
VE-CAD(seq id no:20)          ATGATCGAGGTGAAGAAGGACGAGGCGGACCACGACGGCGACGGCCCCCCTACGACACG 2300
                               * **                *      *    **       *  ** **    **  *

P-CAD(seq id no:11)           CTCTTGGTGTTCGACTATGAGGGCAGCGGCTCCGACGCCGCGTCCCTGAGCTCCCTCACC 2458
E-CAD(seq id no:12)           CTGCTCGTGTTTGACTATGAAGGAAGCGGTTCCGAAGCTGCTAGTCTGAGCTCCCTGAAC 2671
N-CAD(seq id no:13)           CTGTTAGTGTTTGACTATGAAGGCAGTGGCTCCACTGCTGGGTCCTTGAGCTCCCTTAAT 2827
R-CAD(seq id no:14)           CTGCTGGTCTTCGACTACGAGGGGAGCGGCTCCACCGCAGGCTCCGTCAGCTCCCTGAAC 2666
M-CAD(seq id no:15)           GCCCTCATCTATGACTACGAGGGTGACGGCTCGGTGGCGGGGACGCTGAGCTCCATCCTG 2336
K-CAD(seq id no:16)           TTGGCCACTTACGCCTATGAAGGCACTGGCTCCGTGGCGGATTCCCTGAGCTCGCTGGAG 2588
CAD12(seq id no:17)           CTGGCCACATATGCCTACGAAGGGAGTGGGTCCGTGGCAGAGTCCCTCAGCTCTATAGAC 2358
CAD8(seq id no:18)            ATTCAAATATATGGCTATGAAGGCCGAGGGTCAGTGGCTGGCTCCCTCAGCTCCTTGGAG 2277
OB-CAD(seq id no:19)          ATTCAAATCTACGGTTATGAAGGCAGGGGCTCAGTGGCCGGGTCCCTGAGCTCCCTAGAG 2432
VE-CAD(seq id no:20)          CTGCACATCTACGGCTACGAGGGCTCCGAGTCCATAGCCGAGTCCCTCAGCTCCCTGGGC 2360
                                       *  *  ** ** **    *  **    ** *      * *****  *

P-CAD(seq id no:11)           TCCTCCGCCTCCGACCAAGACCAAGATTACGATTATCTGAACGAGTGGGGCAGCCGCTTC 2518
E-CAD(seq id no:12)           TCCTCAGAGTCAGACAAAGACCAGGACTATGACTACTTGAACGAATGGGGCAATCGCTTC 2731
N-CAD(seq id no:13)           TCCTCAAGTAGTGGTGGTGAGCAGGACTATGATTACCTGAACGACTGGGGGCCACGGTTC 2887
R-CAD(seq id no:14)           TCATC---CAGTTCCGGGGACCAAGACTACGATTACCTCAACGACTGGGGGCCCAGATTC 2723
M-CAD(seq id no:15)           TCCAGCCAGGGCGATGAGGACCAGGACTACGACTACCTCAGAGACTGGGGGCCCCGCTTC 2396
K-CAD(seq id no:16)           TCAGTGACCACGGATGCAGATCAAGACTATGATTACCTTAGTGACTGGGGACCTCGATTC 2648
CAD12(seq id no:17)           TCTCTCACCACAGAAGCCGACCAGGACTATGACTATCTGACAGACTGGGGACCCCGCTTT 2418
CAD8(seq id no:18)            TCCACCACATCAGACTCAGACCAGAATTTTGACTACCTCAGTGACTGGGGTCCCCGCTTT 2337
OB-CAD(seq id no:19)          TCGGCCACCACAGATTCAGACTTGGACTATGATTATCTACAGAACTGGGGACCTCGTTTT 2492
VE-CAD(seq id no:20)          ACCGACTCATCCGACTCTGACGTGGATTACGACTTCCTTAACGACTGGGGACCCAGGTTT 2420
                               *                **     * *  ** *   *     * *****     * **

P-CAD(seq id no:11)           AAGAAGCTGGCAGACATCTACGG-TGGCGGCGAGGAC--GACT----AGGCGGCCTG--- 2568
E-CAD(seq id no:12)           AAGAAGCTGGCTGACATGTACGG-AGGCGGCGAGGAC--GACT----AGGGGACTCG--- 2781
N-CAD(seq id no:13)           AAGAAACTTGCTGACATGTATGG-TGGAGGTGATGACTGAACTTCAGGGTGAACTTG-GT 2945
R-CAD(seq id no:14)           AAGAAGCTGGCGGACATGTATGG-AGGTGGTGAAGA--GGATT---GACTGACCTCGCAT 2777
M-CAD(seq id no:15)           GCCCGGCTGGCAGACATGTATGGGCACCCGTGCGGGTTGGAGTACGGGGCCAGATGGGAC 2456
K-CAD(seq id no:16)           AAAAAGCTTGCAGATATGTATGG-AGGAGTGGACAGTGACAAAG-ACTCCTAATCTGTTG 2706
CAD12(seq id no:17)           AAAGTCTTGGCAGACATGTTTGG-CGAAGAAGAGAGTTATA----ACCCTGATAAAGTCA 2473
CAD8(seq id no:18)            AAGAGACTGGGCGAACTCTACTC-TGTTGGTGAAAGTGACAAAGAAACTTGACAGTGGAT 2396
OB-CAD(seq id no:19)          AAGAAACTAGCAGATTTGTATGG-TTCCAAAGACACTTTTGA-------TGACGATTCTT 2544
VE-CAD(seq id no:20)          AAGATGCTGGCTGAGCTGTACGG-CTCGGACCCCCGGGAGGA---GCTGCTGTATTAGGC 2476
                                     * *  **  * *

P-CAD(seq id no:11)           CCTG---CAGGGCTGGGGACCAAACGTCAGGC----CACAG-AGCATCTC-CAAGGGGTC 2619
E-CAD(seq id no:12)           AGAGAGGCGGGCCCCAGACCCATGTGCTGGGAAATGCAGAA-ATCACGTTGCTGGTGGTT 2840
N-CAD(seq id no:13)           TTTTGGACAAGTACAAACAATTTCAACTGATATTCCCAAAA-AGCATTCAGAAGCTAGGC 3004
R-CAD(seq id no:14)           CTTCGGACCGAAGTGAGAGCCGTGCTCGGACGCCGGAGGAGCAGGACTGAGCAGAGGCGG 2837
M-CAD(seq id no:15)           CACCAGGCCAGGG-AGGGTCTTTCTCCTGGGG----CACTG--CTACCCAGACACAGAGG 2509
K-CAD(seq id no:16)           CCTTTTTCATTTTCCAATACGACACTGAAATA----TGTGAAGTGGCTATTTCTTTATAT 2762
CAD12(seq id no:17)           CTTAAGGGAGTCGTGGAGGCTAAAATACAAC-----CGAGAGG-GGAGATTTTT------ 2521
CAD8(seq id no:18)            TATAAATAAATCACTGGAACTGA---GCATTC----TGTAATATTCTAGGGTCACTCCCC 2449
OB-CAD(seq id no:19)          AACAATAACGATACAAATTTGGCCTTAAGAAC----TGTGTCT--GGCGTTCTCAAGAAT 2598
VE-CAD(seq id no:20)          GGCCGAGGTCACTCTGGGCCTG----GGGACC----CAAACCCCCTGCAGCCCAGGCCAG 2528

P-CAD(seq id no:11)           TCAGTTCCCCCTTCAGCTGAGGACTTCGGAGCTTGTCAGGAAGTGGCCGTAGCAACTTGG 2679
E-CAD(seq id no:12)           TTTCAGCTCCCTTCCCTTGAGA-----TGAGTTTCTGGGGAAAAAAAAGAGACTGGTTAG 2895
N-CAD(seq id no:13)           TTTAACTTTGTAGTCTACTAGCAC---AGTGCTTGCTGGAGGCTTTGGCATAGGCTGCAA 3061
R-CAD(seq id no:14)           CCGGTCTTCCCGACTCCCTGCGGC---TGTG-TCCTTAGTGCTGTTAGGAGGCCCCCCAA 2893
M-CAD(seq id no:15)           CCGGACAGCCTGACCCTGGGGC------GCAACTGGACATGCCACTCCCCGGCCTCGTGG 2563
K-CAD(seq id no:16)           TTATCCACTACTCCGTGAAGGCTTCTCTGTTCTACCCGTTCCAAAAGCCAATGGCTGCAG 2822
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            TTAGATACAAC-CAATGTGGCTATTTGTTTAGAGGCAAGTTTAGCACCAGTCATCTATAA 2508
OB-CAD(seq id no:19)          CTAGAAGATGTGTAACAGGTATTTTTT--------------------------------- 2625
VE-CAD(seq id no:20)          TCAGACGCCAGGCACCACAGCCTCCAAAAATGGCAGTGACTCCCCAGCCCAGCACCCCTT 2588
```

Fig. 3i

```
P-CAD(seq id no:11)     CGGAGACAGGCTATGAGTCTGAC GTTAGAGTGGTTGCTTCCTTAGCCTTTCAGGATGGAG 2739
E-CAD(seq id no:12)     TG-----ATGCAGTTAGTATAGCTTTATACTC-TCTCCACTTTATAGCTCTAATAAGTTT 2949
N-CAD(seq id no:13)     AC----C--AATTTGGGCTCAGAGGGAATATCAGTGATCCATACTGTTTGGAAAAACACT 3115
R-CAD(seq id no:14)     TC----CCCACGTTGAGCTGTCTAGCATGAGCACCCACCCCCAC--------AGCGCCCT 2941
M-CAD(seq id no:15)     CA-------GTGATGGCCCCTGCAGAGGCAGCCTGAGGTCACCGGGCC--CGACCCCCCT 2614
K-CAD(seq id no:16)     TC-------CGTGTGGATCCAATGTTAGAGACTTTTTTCTAGTACACTTTTATGA GCTTC 2875
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      CT-------CAACCACATTTAATGTTGACAAAAAGATAATAAAT---------------- 2545
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CC-------TCGTGGGTCCCAGAGACCTCATCAGCCTTGGGATAGCAAACTCCAGGTTCC 2641

P-CAD(seq id no:11)     GAATGTGGGCA-GTTTGACTTCAGCACTGAAAACCTCTCCACCTGGGCCAGGGTTGCCTC 2798
E-CAD(seq id no:12)     GTGTTAGAAAA-GTTTCGACTTATTTCTTAAAGCTTTTTTTTTTTTCCCATCACTCTTTA 3008
N-CAD(seq id no:13)     GAGCTCAGTTACACTTGAATTTTACAGTACAGAAGCACTGGGATTTTATGTGCCTTTTTG 3175
R-CAD(seq id no:14)     GCACCCGGCCGCTGCCCAGCACCGCGCTG-GCTGGCACTGAAGGACAGCAAGAGGCACTC 3000
M-CAD(seq id no:15)     GGGCCTGGGGCAGCCTCCTTCCTGTAGGCGAGGGCCCAAGTCTGGGGGCAGAACCTGAGT 2674
K-CAD(seq id no:16)     CAAGGGGCAAATTTTTATTTTTTAGTGCATCCAGTTAACCAAGTCAGCCCA ACAGGCAGG 2935
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TGAAATATCCAGGAATATATGTCAGTGATGACTATTCTCAAATGCTGGCAAATCCA---- 2697

P-CAD(seq id no:11)     AGAGGCCAAGTT-TCCAGAAGC--CTCTTACCTGCCG-----TAAAATGCTCAACCCT-- 2848
E-CAD(seq id no:12)     CATGGTGGTGATGTCCAAAAGA--TACCCAAATTTTAATATTCCAGAAGAACAACTTTA- 3065
N-CAD(seq id no:13)     TACCTTTTTCAG-ATTGGAATT--AGTTTCTGTTTAAGGCTTTAATGGTACTGATTT-- 3230
R-CAD(seq id no:14)     TGTCTTC------ACTTGAAT----------TTCCTAGAAC---AGAAGCACTGTTTT-- 3039
M-CAD(seq id no:15)     GTGGATGGGGCGGCCAGGAAGAGGCCCCTTCCTGCCGGGGTGGAAGAGTTTCTCTCCAT 2734
K-CAD(seq id no:16)     TGCCGGAGGGGAGGACAGGGAACAGTATTTCCACTTGTTCTCAGGGCAGCGT GCCCGCTT 2995
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    -GGCTGGTGTTCTGTCTGGGCTCAGACATCCACATAACCCTGTCACCCACAGACCGCCGT 2756

P-CAD(seq id no:11)     --GTGTCCTGGGCCTGGGCCT GC-TGTGACTGACCTAC--AGTGGACTTTCTCTC---TG 2900
E-CAD(seq id no:12)     --GCATCAGAAGGTTCACCCAGCACCTTGCAGATTTTCTTAAGGAATTTTGTCTCACTTT 3123
N-CAD(seq id no:13)     -----CTGAAACGATAAGTAAAAGACAAAATATTTTGTGGTGGGAGCAGTAAGTTAA-AC 3284
R-CAD(seq id no:14)     -----TAAAAAAAAAAAAAAAAAAAGAAG------------------------------- 3063
M-CAD(seq id no:15)     CGGCCCCATGCGGGTCACCTCCCTAGTCCCACCTTTGCCTCCTACCAGTGAACCTCATCT 2794
K-CAD(seq id no:16)     C--CGCTGTCCTGGTGTTTTACTACACTCCATGTCAGGTCAGCCAACTGCCCT AACTGTA 3053
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    C--TAACTCAAAGACTTCCTCTGGCTCCCCAAGGCTGCAAAGCAAAACAGACTGTGTTTA 2814

P-CAD(seq id no:11)     GAATGGAACCTTCTTAGGCCTC CTGGTGCAACTTAATTTTTTTTTTTA-ATGCTATCTTC 2959
E-CAD(seq id no:12)     TAAAAAGAAGGGGAGAAGTCAGCTACTCTAGTTCTGTTGTTTTGTGTATATAATTTTTA 3183
N-CAD(seq id no:13)     CATGATATGCTTCAACACGCTTTTGTTACATTGCATTTGCTTTTATTAAAATACAAAATT 3344
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     TTGTATGAAAGACAGCAACCTCCTGGGTAAATCTGAATG --------------------- 2833
K-CAD(seq id no:16)     CATTTCACAGGCTAATGGGATAAAGGACTGTGCTTTAAAGATAAAAATATCATCATAGT A 3113
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ACTGCTGCAGGGTCTTTTTCTAGGGTCCCTGAACGCCCTGGTAAGGCTGGTGAGGTCCTG 2874

P-CAD(seq id no:11)     AAAACGTTAGAGAAAGTTCTTCAAAAGT GCAGCCCAGAGCTGCTGGGCCCACTGGCCGTC 3019
E-CAD(seq id no:12)     AAAAAAATTTGTGTGCTTCT------GCTCATTACTACACTGGTGTGTCCCTCTGCCTTT 3237
N-CAD(seq id no:13)     AAACAAACAAAAAAACTCAT-----GGAGCGATTTTATTATCTTGGGGGATGAGACCATG 3399
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     AAAGAAATGAGGGCATATCGGCTCACAAAGAGATAAACTACATAGGGGTGTTTATTTGTG 3173
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    GTGCCTATCTGCCTGGA---GGCAAAGGCCTGGACAGCTTGACTTGTGGGGCAGGATTCT 2931
```

Fig. 3j

```
P-CAD(seq id no:11)     CTGCATTTCTGGTTTCCAGACCCCAATGCC TCCCATTCGGATGGATCTCTGCGTTTTTAT 3079
E-CAD(seq id no:12)     TTTTTTTTTTTTAAGACAGGGTCTCATTCTATCGGCCAGGCTGGAGTGCAGTGGTGCAAT 3297
N-CAD(seq id no:13)     AGATTGGAAAATGTACATTACTTCTAGTTTTAGACTTTAGTTTGTTTTTTTTTTTTCACT 3459
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TCACAAAGAATTTAAAATAACACTTGCCCATGCTATTTGTTCTTCAAGAACTTTCTCTGC 3233
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CTGCAGCCCATTCCCAAGGGAGACTGACCATCATGCCCTCTCTCGGGAGCCCTAGCCCTG 2991

P-CAD(seq id no:11)     ----ACTGAGTGT-GCCTAGGTTGCCC---CTTATTTTTTATTTTCCCTGTTGCG-TTGC 3130
E-CAD(seq id no:12)     CACAGCTCACTGCAGCCTTGTCCTCCCAGGCTCAAGCTATCCTTGCACCTCAGCC -TCCC 3356
N-CAD(seq id no:13)     AAAATCTTAAAACTTACTCAGCTGGTTGCAAATAAAGGGAGTTTTCATATCACCAATTTG 3519
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     CATCAACTACTATTCAAAACCTCAAATCCACCCATATGTTAAAATTCTCATTACTCTTAA 3293
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CTCCAACTCCATACTCCACTCCAAGTGCCCCACCACTCCCCAACCCCTCTCCAGGCCTGT 3051

P-CAD(seq id no:11)     TATAGATGAAGGGTGAGGACAATCGTGTATATGTACTAGAACTTTTTTA -----TTAAAG 3185
E-CAD(seq id no:12)     AAGTAGCTGGGACCACAGGCATGCACCACTACGCATGACTAATTTTTTAAATATTTGAGA 3416
N-CAD(seq id no:13)     TAGCAAAATTGAATTTTTTCATAAACTAGAATGTTAGACACATTTTGGTCTTAATCCATG 3579
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GGAATAGAAGCAAATTAAACGGTAACATCCAAAAGCAACCACAAACCTAGTACGACTTCA 3353
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CAAGAGGGAGGAAGGGGCCCCATGGCAGCTCCTGACCTTGGGTCCTGAAGTGACCTCACT 3111

P-CAD(seq id no:11)     AAACTTTTCCCAGAAAAAAA ---------------------------------------  3205
E-CAD(seq id no:12)     CGGGGTCTCCCTGTGTTACCCAGGCTGGTCTCAAACTCCTGGGCTCAAGTGATCCTCCCA 3476
N-CAD(seq id no:13)     TACACTTTTTTATTTCTGTATTTTTCCACTTCACTGTAAAAATAGTATGTGTACATAATG 3639
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TTCCTTCCACTAACTCATAGTTTGTTATATCCTAGACTAGACATGCGAAAGTTTGCCTTT 3413
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    GGCCTGCCA-TGCCAGTAACTGTGCTGTACTGAGCACTGAACCACATTCAGGGAAATGGC 3170

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TCTTGGCCTCCCAGAGTATTGGGAT ---TACAGACATGAGCCACTGCACCTGCCCAGCTC 3533
N-CAD(seq id no:13)     TTTTATTGGCATAGTCTATGGAGAAGTGCAGAAACTTCAGAACATGTGTATGTATTATTT 3699
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GTACCATATAAAGGGGGAGGGAAATAGCTAATAATGTTAACCAAGGAAATATATTTTACC 3473
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TTATTAAA CTTTGAAGCAACTGTGAATTCATTCTGGAGGGGCAGTGGAGATCAGGAGTGA 3230

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     CCCAACTCCCTGCCATTTTTTAAGAGACAGTTTCGCTCCATCGCCCAGGCCTGGGATGCA 3593
N-CAD(seq id no:13)     GGACTATGGATTCAGGTTTTTTGCATGTTTATATCTTTCGTTATGGATAAAGTATTTACA 3759
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     ATACATTTAAAGTTTTGGCCACCACATGTATCACGGGTCACTTGAAATTCTTTCAGCTAT 3533
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CAGATCACAGGGTGAGGGCCACCT CCACACCCACCCCCTCTGGAGAAGGCCTGGAAGAGC 3290
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Fig. 3k

```
P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     GTGATG TGATCATAGCTCACTGTAACCTCAAACTCTGGGGCTCAAGCAGTTCTCCCACCA 3653
N-CAD(seq id no:13)     AAACAGTGACATTTGATTCAATTGTTGAGCTGTAGTTAGAATACTCAATTTTTAATTTTT 3819
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     CAGTAGGCTAATGTCAAAATTGTTTAAAAATTCTTGAAAGAATTTTCCTGAGACAAATTT 3593
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TGAGACCTTGCTTTGAGACTCCTCAGCACCC CTCCAGTTTTGCCTGAGAAGGGGCAGATG 3350

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     GCCTCCTTTTTATTTTTTTGTA CAGATGGGGTCTTGCTATGTTGCCCAAGCTGGTCTTAA 3713
N-CAD(seq id no:13)     TTAATTTTTTTATTTTTTATTTTCTTTTTGGTTTGGGGAGGGAGAAAAGTTCTTAGCACA 3879
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TAACTTCTTGTCTATAGTTGTCAGTATTATTCTACTATACTGTACATGAAAGTAGCAGTG 3653
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TTCCCGGAGCAGAAGACGTCTCCCCTTCTCTGCCTCACCTGGTCGCC AATCCATGCTCTC 3410

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     ACTCCTGGCCTCAAGCAATCCTTCTGCCTTGGCCCCCC AAAGTGCTGGGATTGTGGGCAT 3773
N-CAD(seq id no:13)     AATGTTTTACATAATTTGTACCAAAAAAAAAAAAAAGGAAAGGAAAGAAAGGGGTGGCCT 3939
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TGAAGTACAATAATTCATATTCTTCATATCCTTCTTACACGACTAAGTTGAATTAGTAAA 3713
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TTTCTTTTCTCTGTCTACTCCTTATCCCTTGGTTTAGAGGAACCCAAGATGTGGCCTTTA 34 70

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     GAGCTGCTGTGCCCAGCCTCCATGTTTTAATATCAACTCTCACTCCTGAATTCA GTTGCT 3833
N-CAD(seq id no:13)     GACACTGGTGGCACTACTAAGTGTGTGTTTTTTAAAAAAAAAAATGGAAAAAAAAAAGCT 3999
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GTTAGATTAAATAAAACTTAAATCTCACTCTAGGAGTTCAGTGGAGAGGTTAGAGCCAGC 3773
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    GCAAAACTGGACAATGTCCAAACCCACTCATGACTGCATGACGGAGCCGAGCCATGTGTC 3530

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TTGCCCAAGATAGGAGTTCTCTGATGCAGAAATTATTGGGCTCTTTTAGGGTAAGAAGTT 3893
N-CAD(seq id no:13)     TTTAAACTGGAGAGACTTCTGACAACAGCTTTGCCTCTGTATTGTGTACCAGAATATAAA 4059
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     CACACTTGAACCTAATACCCTGCCCTTGACATCTGGAAACCTCTACATATTTATATAACG 3833
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TTTACACCTCGCTGTTGTCACATCTCAGGGAACTGACCCTCAGGCACACCTTGCAGAAGG 3590

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TGTGTCTTTGTCTGGCCACATCTTGACTAGGTATTGTCTACTCTGAAGACCTTTAATGGC 3953
N-CAD(seq id no:13)     TGATACACCTCTGACCCCAGCGTTCTGAATAAAATGCTAATTTTGGAAAAAAAAAAAAAA 4119
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TGATACATTTGGATAAACAACATTGAGATTATGATGAAAACCTACATATTCCATGTTTGG 3893
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    CAAGGCCCTGCCCTGCCCAACCTCTGTGGTCACCCATGCATCTTCCACTGGAACGTTTCA 3650
```

Fig. 3l

```
P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           TTCCCTCTTTCATCTCCTGAGTATGTAACTTGCAATGGGCAGCTATCCAGTGACTTGTTC 4013
N-CAD(seq id no:13)           AAA---------------------------------------------------------  4122
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           AAGACCCTTGGAAGAGGAAAATTGGATTCCCTTAAACAAAAGTGTTTAAGATTGTAATTA 3953
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ------------------------------------------------------------
VE-CAD(seq id no:20)          CTGCAAACACACCTTGGAGAAGTGGCATCAGTCAACAGAGAGGGGCAGGGAAGGAGACAC 3710

P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           TGAGTAAGTGTGTTCATTAATGTTTATTTAGCTCTGAAGCAAGAGTGATATACTCCAGGA 4073
N-CAD(seq id no:13)           ------------------------------------------------------------
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           AAATGATAGTTGATTTTCAAAAGCATTAATTTTTTTTCATTGTTTTTAACTTTGCTTTCA 4013
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ------------------------------------------------------------
VE-CAD(seq id no:20)          CAAGCTCACCCTTCGTCATGGACCGAGGTTCCCACTCTGGGCAAAGCCCCTCACACTGCA 3770

P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           CTTAGAATAGTGCCTAAAGTGCTGCAGCCAAAGACAGAGCGGAACTATGAAAAGTGGGCT 4133
N-CAD(seq id no:13)           ------------------------------------------------------------
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           TGACCATCCTGCCATCC TTGACTTTGAACTAATGATAAAGTAATGATCTCAAACTATGAC 4073
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ------------------------------------------------------------
VE-CAD(seq id no:20)          AGGGATTGTAGATAACACTGACTTGTTTGTTTTAACCAATAACTAGCTTCTTATAATGAT 3830

P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           TGGAGATGGCAGGAGAGCTTGTCATTGAGCCTGGCAATTTAGCAAACTGATGCTGAGGAT 4193
N-CAD(seq id no:13)           -------------------------    ------------------------- -----
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           AGAAAAGTAATGTAAAATCCATCCAATCTATTATTTCT CTAATTATGCAATTAGCCTCAT 4133
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ------------------------------------------------------------
VE-CAD(seq id no:20)          TTTTTTACTAATGATACTTACAAGTTTCTAGCTCTCACAGACATATAGAATAAGGGTTTT 3890

P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           GATTGAGGTGGGTCTACCTCATCTCTGAAAATTCTGGAAGGAATGGAGGAGTCTCAACAT 4253
N-CAD(seq id no:13)           ------------------------------------------------------------
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           AGTTATTATCCAGAGGACCCAACTGAACTGAACTAATCCTTCTGGCAGATTCAAATCGT T 4193
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ------------------------------------------------------------
VE-CAD(seq id no:20)          TGCATAATAAGCAGGTTGTTATTTAGGTTAACAATATTAATTCAGGTTTTTTAGTTGGAA 3950

P-CAD(seq id no:11)           ------------------------------------------------------------
E-CAD(seq id no:12)           GTGTTTCTGACACAAGATCCGTGGTTTGTACTCAAAGCCCAGAATCCCCAAGTGCCTGCT 4313
N-CAD(seq id no:13)           ------------------------------------------------------------
R-CAD(seq id no:14)           ------------------------------------------------------------
M-CAD(seq id no:15)           ------------------------------------------------------------
K-CAD(seq id no:16)           TATTTCACACGCTGTTCTAATGGCACTTATCATTAGAATCTTACCTT -----GTGCAGTC 4248
CAD12(seq id no:17)           ------------------------------------------------------------
CAD8(seq id no:18)            ------------------------------------------------------------
OB-CAD(seq id no:19)          ---------------------------------------------------------- --
VE-CAD(seq id no:20)          AAACAATTCCTGTAACCTTCTATTTTCTATAATTGTAGTAATTGCTCTACAGATAATGTC 4010
```

Fig. 3m

```
P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TTTGATGATGTCTACAGAAAATGCTGGCTGAGCTGAACACATTTGCCCAATTCCAGGTGT 4373
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     ATCAGAAATTCCAGCGTACTATAATGAAAACATCCTTGTTTTGAAAACCTAAAAGACAGG 4308
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    TATATATTGGCCAAACTGGTGCATGACAAGTACTGTATTTTTTTATACCTAAATAAAGAA 4070

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     GCACAGAAAACCGAGAATATTCAAAATTCCAAATTTTTTCTTAGGAGCAAGAAGAAAATG 4433
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     CTCTGTATATATATATACTTAAGAATATGCTGACTTCACTTATTAGTCTTAGGGATTTAT 4368
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    AAATCTTTAGCCTGGGCAACAAAAAAA--------------------------------- 4097

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TGGCCCTAAAGGGGGTTAGTTGAGGGGTAGGGGGTAGTGAGGATCTTGATTTGGATCTCT 4493
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TTTCAATTAATATTAATTTTCTACAAATAATTTTAGTGTCATTTCCATTTGGGGATATTG 4428
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TTTTATTTAAATGTGAA TTTCAACTTTTGACAATCAAAGAAAAGACTTTTGTTGAAATAG 4553
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     TCATATCAGCACATATTTTCTGTTTGGAAACACACTGTTGTTTAGTTAAGTTTTAAATAG 4488
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     CTTTACTGTTTCTCAAGTGTTTTGGAGAAAAAAATCAACCCTG CAATCACTTTTTGGAAT 4613
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     GTGTATTACCCAAGAAGTAAAGATGGAAACGTT--------------------------- 4521
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TGTCTTGATTTTTCGGCAGTTCAAGCTATATCGAATATAGTTCTGTGTAGAGAATGTCAC 4673
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     ------------------------------------------------------------
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------
```

Fig. 3n

```
P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     TGTAGTTTTGAGTGTATACATGTGTGGGTGCTGATAATTGTGTATTTTCTTTGGGGGTGG 4733
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     ------------------------------------------------------------
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     ------------------------------------------------------------
E-CAD(seq id no:12)     AAAAGGAAAACAATTCAAGCTGAGAAAAGTATTCTCAAAGATGCATTTTTATAAATTTTA 4793
N-CAD(seq id no:13)     ------------------------------------------------------------
R-CAD(seq id no:14)     ------------------------------------------------------------
M-CAD(seq id no:15)     ------------------------------------------------------------
K-CAD(seq id no:16)     ------------------------------------------------------------
CAD12(seq id no:17)     ------------------------------------------------------------
CAD8(seq id no:18)      ------------------------------------------------------------
OB-CAD(seq id no:19)    ------------------------------------------------------------
VE-CAD(seq id no:20)    ------------------------------------------------------------

P-CAD(seq id no:11)     -----------------------------------
E-CAD(seq id no:12)     TTAAACAATTTTGTTAAACCATAAAAAAAAAAAAA 4828
N-CAD(seq id no:13)     -----------------------------------
R-CAD(seq id no:14)     -----------------------------------
M-CAD(seq id no:15)     -----------------------------------
K-CAD(seq id no:16)     -----------------------------------
CAD12(seq id no:17)     -----------------------------------
CAD8(seq id no:18)      -----------------------------------
OB-CAD(seq id no:19)    -----------------------------------
VE-CAD(seq id no:20)    -----------------------------------
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Fig. 3o

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Sequence 3: N-cad 4122 bp Sequence 4: R-cad 3063 bp Sequence 5:
VE-cad 4097 bp Sequence 6: k-cad 4521 bp Sequence 7: cad8 2545 bp
Sequence 8: OB-cad 2625 bp Sequence 9: cad12 2521 bp Sequence 10:
M-cad 2833 bp Start of Pairwise alignments Aligning... Sequences
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Sequences (1:2) Aligned. Score: 44 Sequences (2:3) Aligned. Score:
32 Sequences (4:6) Aligned. Score: 12 Sequences (3:5) Aligned.
Score: 2 Sequences (4:7) Aligned. Score: 15 Sequences (1:3)
Aligned. Score: 39 Sequences (2:4) Aligned. Score: 41 Sequences
(4:8) Aligned. Score: 15 Sequences (4:9) Aligned. Score: 12
Sequences (3:6) Aligned. Score: 28 Sequences (2:5) Aligned. Score :
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Score: 48 Sequences (3:7) Aligned. Score: 22 Sequences (1:5)
Aligned. Score: 5 Sequences (2:6) Aligned. Score: 5 Sequences
(3:8) Aligned. Score: 44 Sequences (1:6) Aligned. Score: 9
Sequences (2:7) Aligned. Score: 12 Sequences (5:6) Aligned. Score:
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Score: 12 Sequences (2:8) Aligned. Score: 9 Sequences (1:8)
Aligned. Score: 11 Sequences (5:7) Aligned. Score: 46 Sequences
(2:9) Aligned. Score: 10 Sequences (1:9) Aligned. Score: 10
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(5:9) Aligned. Score: 26 Sequences (7:8) Aligned. Score: 58
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(6:9) Aligned. Score: 61 Sequences (6:10) Aligned. Score: 11 Guide
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Group 3: Sequences: 4 Score:33207 Group 4: Sequences: 5
Score:28750 Group 5: Sequences: 2 Score:34511 Group 6: Sequences:
3 Score:31621 Group 7: Sequences: 4 Score:32698 Group 8:
Sequences: 5 Score:29901 Group 9: Sequences: 10 Score:24821
Alignment Score 324434 CLUSTAL-Alignment file created
[/net/nfs0/vol1/production/w3nobody/tmp/999613.518738-453970.aln]
```

Fig. 3p

```
K-CAD(SEQ ID NO:1)      MRTY------RYFLLLFWVGQPYPTLS--TPLSKRTSGFPAKKRALELSGNS-------- 44
CAD12(SEQ ID NO:2)      MLTR------NCLSLLLWVLFDGGLLTPLQPQPQQTLATEPRENVIHLPGQ--------- 45
CAD8(SEQ ID NO:3)       MPERLAEMLLDLWTPLIILWITLPPCIYMAPMNQSQVLMSGSPLELNSLGEE-------- 52
OB-CAD(SEQ ID NO:4)     MKEN-----YCLQAALVCLGMLCHSHAFAP---ERRGHLRPSFHGHHEKGKE-------- 44
VE-CAD(SEQ ID NO:5)     -----------MQRLMMLLATSGACLGLLAVAAVAAAGANPAQRDTHSLLP--------- 40
P-CAD(SEQ ID NO:6)      -----MG-LPRGPLASLLLLQVCWLQCAASEPCRAVFREAEVTLEAGGAEQEPGQALGKV 54
E-CAD(SEQ ID NO:7)      -----MGPWSRSLSALLLLLQVSSWLCQEPEPCHPGFDAESYTFTVPRRHLERGRVLGRV 55
N-CAD(SEQ ID NO:8)      -MCRIAGALRTLLPLLLALLQASVEASGEIALCKTGFPEDVYSAVLSKDVHE-GQPLLNV 58
R-CAD(SEQ ID NO:9)      -MTAGAGVLLLLLSLSGALRAHNEDLT-TRETCKAGFSEDDYTALISQNILE-GEKLLQV 57
M-CAD(SEQ ID NO:10)     --------MDAAFLLVLGLLAQSLCLSLGVPGWRRPTTLYPWR----------------- 35
                                          :

K-CAD(SEQ ID NO:1)      ------------------------------------------------------------
CAD12(SEQ ID NO:2)      ------------------------------------------------------------
CAD8(SEQ ID NO:3)       ------------------------------------------------------------
OB-CAD(SEQ ID NO:4)     ------------------------------------------------------------
VE-CAD(SEQ ID NO:5)     ------------------------------------------------------------
P-CAD(SEQ ID NO:6)      -FMGCPGQEPALFSTD-NDDFTVRNGETVQERRSLKERNP-------------------- 92
E-CAD(SEQ ID NO:7)      NFEDCTGRQRTAYFSL-DTRFKVGTDGVITVKRPLRFHNPQIHFLVYAWDSTYRKFSTKV 114
N-CAD(SEQ ID NO:8)      KFSNCNGKRKVQYESSEPADFKVDEDGMVYAVRSFPLSSEHAKFLIYAQDKETQEKWQVA 118
R-CAD(SEQ ID NO:9)      KFSSCVGTKGTQYETN-SMDFKVGADGTVFATRELQVPSEQVAFTVTAWDSQTAEKWDAV 116
M-CAD(SEQ ID NO:10)     ------------------------------------------------------------

K-CAD(SEQ ID NO:1)       --------------------------------------------KNELNRSKRSWMWNQF 60
CAD12(SEQ ID NO:2)       --------------------------------------------RSHFQRVKRGWVWNQF 61
CAD8(SEQ ID NO:3)        --------------------------------------------QRILNRSKRGWVWNQM 68
OB-CAD(SEQ ID NO:4)      --------------------------------------------GQVLQRSKRGWVWNQF 60
VE-CAD(SEQ ID NO:5)      ----------------------------------------------THRRQKRDWIWNQM 54
P-CAD(SEQ ID NO:6)       -------------------------------------LKIFP-SKRILRRHKRDWVVAPI 114
E-CAD(SEQ ID NO:7)       TLNTVGHHHRPPP-------------HQASVSGIQAELLTFPNSSPGLRRQKRDWVIPPI 161
N-CAD(SEQ ID NO:8)       VKLSLKPTLTEES------------VKESAEVEEIVFPRQFSKHSGHLQRQKRDWVIPPI 166
R-CAD(SEQ ID NO:9)       VRLLVAQTSSPHSGHKPQKGKKVVALDPSPPPKDTLLPWPQHQNANGLRRRKRDWVIPPI 176
M-CAD(SEQ ID NO:10)      -------------------------------------------RAPALSRVRRAWVIPPI 52
                                                                  * :* *:   :

K-CAD(SEQ ID NO:1)       FLLEEYTGSDYQYVGKLHSDQDRGDGSLKYILSGDGAG----DLFIINENTGDIQATKRL 116
CAD12(SEQ ID NO:2)       FVLEEYVGSEPQYVGKLHSDLDKGEGTVKYTLSGDGAG----TVFTIDETTGDIHAIRSL 117
CAD8(SEQ ID NO:3)        FVLEEFSGPEPILVGRLHTDLDPGSKKIKYILSGDGAG----TIFQINDVTGDIHAIKRL 124
OB-CAD(SEQ ID NO:4)      FVIEEYTGPDPVLVGRLHSDIDSGDGNIKYILSGEGAG----TIFVIDDKSGNIHATKTL 116
VE-CAD(SEQ ID NO:5)      HIDEEKNTSLPHHVGKIKSSVSR--KNAKYLLKGEYVG----KVFRVDAETGDVFAIERL 108
P-CAD(SEQ ID NO:6)       SVPENGKGPFPQRLNQLKSNKDR-DTKIFYSITGPGADSPPEGVFAVEKETGWLLLNKPL 173
E-CAD(SEQ ID NO:7)       SCPENEKGPFPKNLVQIKSNKDK-EGKVFYSITGQGADTPPVGVFIIERETGWLKVTEPL 220
N-CAD(SEQ ID NO:8)       NLPENSRGPFPQELVRIRSDRDK-NLSLRYSVTGPGADQPPTGIFIINPISGQLSVTKPL 225
R-CAD(SEQ ID NO:9)       NVPENSRGPFPQQLVRIRSDKDN-DIPIRYSITGVGADQPPMEVFSINSMSGRMYVTRPM 235
M-CAD(SEQ ID NO:10)      SVSENHKR-LPYPLVQIKSDKQQ-LGSVIYSIQGPGVDEEPRGVFSIDKFTGKVFLNAML 110
                            *:        : ::::. .       * : *  ..     :* ::  :* :     :

K-CAD(SEQ ID NO:1)       DREEKPVYILRAQAINRRTGRPVEPESEFIIKIHDINDNEPIFTKEVYTATVPEMSDVGT 176
CAD12(SEQ ID NO:2)       DREEKPFYTLRAQAVDIETRKPLEPESEFIIKVQDINDNEPKFLDGPYVATVPEMSPVGA 177
CAD8(SEQ ID NO:3)        DREEKAEYTLTAQAVDWETSKPLEPPSEFIIKVQDINDNAPEFLNGPYHATVPEMSILGT 184
OB-CAD(SEQ ID NO:4)      DREERAQYTLMAQAVDRDTNRPLEPPSEFIVKVQDINDNPPEFLHETYHANVPERSNVGT 176
VE-CAD(SEQ ID NO:5)      DRENISEYHLTAVIVDKDTGENLETPSSFTIKVHDVNDNWPVFTHRLFNASVPESSAVGT 168
P-CAD(SEQ ID NO:6)       DREEIAKYELFGHAVSEN-GASVEDPMNISIIVTDQNDHKPKFTQDTFRGSVLEGVLPGT 232
E-CAD(SEQ ID NO:7)       DRERIATYTLFSHAVSSN-GNAVEDPMEILITVTDQNDNKPEFTQEVFKGSVMEGALPGT 279
N-CAD(SEQ ID NO:8)       DREQIARFHLRAHAVDIN-GNQVENPIDIVINVIDMNDNRPEFLHQVWNGTVPEGSKPGT 284
R-CAD(SEQ ID NO:9)       DREEHASYHLRAHAVDMN-GNKVENPIDLYIYVIDMNDNHPEFINQVYNCSVDEGSKPGT 294
M-CAD(SEQ ID NO:10)      DREKTDRFRLRAFALDLG-GSTLEDPTDLEIVVVDQNDNRPAFLQEAFTGRVLEGAVPGT 169
                         ***.   : * .  :.      :*   .: : : * **: * * .  :   * *    *:

K-CAD(SEQ ID NO:1)       FVVQVTATDADDPTYGNSAKVVYSILQGQP------YFSVESETGIIKTALLNMDRENRE 230
CAD12(SEQ ID NO:2)       YVLQVKATDADDPTYGNSARVVYSILQGQP------YFSIDPKTGVIRTALPNMDREVKE 231
CAD8(SEQ ID NO:3)        SVTNVTATDADDPVYGNSAKLVYSILEGQP------YFSIEPETAIIKTALPNMDREAKE 238
OB-CAD(SEQ ID NO:4)      SVIQVTASDADDPTYGNSAKLVYSILEGQP------YFSVEAQTGIIRTALPNMDREAKE 230
VE-CAD(SEQ ID NO:5)      SVISVTAVDADDPTVGDHASVMYQILKGKE------YFAID-NSGRIITITKSLDREKQA 221
P-CAD(SEQ ID NO:6)       SVMQVTATDEDDAIYTYNGVVAYSIHSQEPKDPHDLMFTIHRSTGTISVISSGLDREKVP 292
E-CAD(SEQ ID NO:7)       SVMEVTATDADDDVNTYNAAIAYTILSQDPELPDKNMFTINRNTGVISVVTTGLDRESFP 339
N-CAD(SEQ ID NO:8)       YVMTVTAIDADDPN-ALNGMLRYRIVSQAPSTPSPNMFTINNETGDIITVAAGLDREKVQ 343
R-CAD(SEQ ID NO:9)       YVMTITANDADDST-TANGMVRYRIVTQTPQSPSQNMFTINSETGDIVTVAAGWDREKVQ 353
M-CAD(SEQ ID NO:10)      YVTRAEATDADDPE-TDNAALRFSILQQG----SPELFSIDELTGEIRTVQVGLDREVVA 224
                          *    * * **      . : : *            *::.  :. * .   . ***
```

Fig. 4a

```
K-CAD(SEQ ID NO:1)      QYQVVIQAKDMGGQ-MGGLSGTTTVNITLTDVNDNPPRFPQSTYQFKTPESSPPGTPIGR 289
CAD12(SEQ ID NO:2)      QYQVLIQAKDMGGQ-LGGLAGTTIVNITLTDVNDNPPRFPKSIFHLKVPESSPIGSAIGR 290
CAD8(SEQ ID NO:3)       EYLVVIQAKDMGGH-SGGLSGTTTLTVTLTDVNDNPPKFAQSLYHFSVPEDVVLGTAIGR 297
OB-CAD(SEQ ID NO:4)     EYHVVIQAKDMGGH-MGGLSGTTKVTITLTDVNDNPPKFPQRLYQMSVSEAAVPGEEVGR 289
VE-CAD(SEQ ID NO:5)     RYEIVVEARDAQG--LRGDSGTATVLVTLQDINDNFPFFTQTKYTFVVPEDTRVGTSVGS 279
P-CAD(SEQ ID NO:6)      EYTLTIQATDMDGD---GSTTTAVAVVEILDANDNAPMFDPQKYEAHVPENA-VGHEVQR 348
E-CAD(SEQ ID NO:7)      TYTLVVQAADLQGE---GLSTTATAVITVTDTNDNPPIFNPTTYKGQVPENE-ANVVITT 395
N-CAD(SEQ ID NO:8)      QYTLIIQATDMEGNPTYGLSNTATAVITVTDVNDNPPEFTAMTFYGEVPENR-VDIIVAN 402
R-CAD(SEQ ID NO:9)      QYTVIVQATDMEGNLNYGLSNTATAIITVTDVNDNPSEFTASTFAGEVPENS-VETVVAN 412
M-CAD(SEQ ID NO:10)     VYNLTLQVADMSGD---GLTATASAIITLDDINDNAPEFTRDEFFMEAIEAV-SGVDVGR 280
                         * : ::. *  *    * : *:   : : * *** . *    :   . *       :

K-CAD(SEQ ID NO:1)      IKASDADVGENA--EIEYSITDGEGLDMFDVITDQETQEGIITVKKLLDFEKKKVYTLKV 347
CAD12(SEQ ID NO:2)      IRAVDPDFGQNA--EIEYNIVPGDGGNLFDIVTDEDTQEGVIKLKKPLDFETKKAYTFKV 348
CAD8(SEQ ID NO:3)       VKANDQDIGENA--QSSYDIIDGDGTALFEITSDAQAQDGIIRLRKPLDFETKKSYTLKV 355
OB-CAD(SEQ ID NO:4)     VKAKDPDIGENG--LVTYNIVDGDGMESFEITTDYETQEGVIKLKKPVDFETERAYSLKV 347
VE-CAD(SEQ ID NO:5)     LFVEDPDEPQNR--MTKYSILRGDYQDAFTIETNPAHNEGIIKPMKPLDYEYIQQYSFIV 337
P-CAD(SEQ ID NO:6)      LTVTDLDAPNSPAWRATYLIMGGDDGDHFTITTHPESNQGILTTRKGLDFEAKNQHTLYV 408
E-CAD(SEQ ID NO:7)      LKVTDADAPNTPAWEAVYTILN-DDGGQFVVTTNPVNNDGILKTAKGLDFEAKQQYILHV 454
N-CAD(SEQ ID NO:8)      LTVTDKDQPHTPAWNAVYRISGGDPTGRFAIQTDPNSNDGLVTVVKPIDFETNRMFVLTV 462
R-CAD(SEQ ID NO:9)      LTVMDRDQPHSPNWNAVYRIISGDPSGHFSVRTDPVTNEGMVTVVKAVDYELNRAFMLTV 472
M-CAD(SEQ ID NO:10)     LEVEDRDLPGSPNWVARFTILEGDPDGQFTIRTDPKTNEGVLSIVKALDYESCEHYELKV 340
                        : . * *   .      : *   :    * : :.   ::*::   * :*:*  . . : *

K-CAD(SEQ ID NO:1)      EASNPYVEPRFLYLGPFKDSATVRIVVEDVDEPPVFSKLAYILQIREDAQINTTIGSVTA 407
CAD12(SEQ ID NO:2)      EASNLHLDHRFHSAGPFKDTATVKISVLDVDEPPVFSKPLYTMEVYEDTPVGTIIGAVTA 408
CAD8(SEQ ID NO:3)       EAANVHIDPRFSGRGPFKDTATVKIVVEDADEPPVFSSPTYLLEVHENAALNSVIGQVTA 415
OB-CAD(SEQ ID NO:4)     EAANVHIDPKFISNGPFKDTVTVKISVEDADEPPMFLAPSYIHEVQENAAAGTVVGRVHA 407
VE-CAD(SEQ ID NO:5)     EATDPTIDLRYMSP-PAGNRAQVIINITDVDEPPIFQQPFYHFQLKENQKK-PLIGTVLA 395
P-CAD(SEQ ID NO:6)      EVTN-EAPFVLKLPT---STATIVVHVEDVNEAPVFVPPSKVVEVQEGIPTGEPVCVYTA 464
E-CAD(SEQ ID NO:7)      AVTN-VVPFEVSLTT---STATVTVDVLDVNEAPIFVPPEKRVEVSEDFGVGQEITSYTA 510
N-CAD(SEQ ID NO:8)      AAEN-QVPLAKGIQHPPQSTATVSVTVIDVNENPYFAPNPKIIRQEEGLHAGTMLTTFTA 521
R-CAD(SEQ ID NO:9)      MVSN-QAPLASGIQMSFQSTAGVTISIMDINEAPYFPSNHKLIRLEEGVPPGTVLTTFSA 531
M-CAD(SEQ ID NO:10)     SVQN-EAPLQAAALRAERGQAKVRVHVQDTNEPPVFQENPLRTSLAEGAPPGTLVATFSA 399
                         . :              . . : : : * :* * *          *.      :    *

K-CAD(SEQ ID NO:1)      QDPDAARNPVKYSVDRHTDMDRIFNIDSGNGSIFTSKLLDRET-----LLWHNITVIATE 462
CAD12(SEQ ID NO:2)      QDLDVGSGAVRYFIDWKSDGDSYFTIDGNEGTIATNELLDRES-----TAQYNFSIIASK 463
CAD8(SEQ ID NO:3)       RDPDITSSPIRFSIDRHTDLERQFNINADDGKITLATPLDREL-----SVWHNITIIATE 470
OB-CAD(SEQ ID NO:4)     KDPDAANSPIRYSIDRHTDLDRFFTINPEDGFIKTTKPLDREE-----TAWLNITVFAAE 462
VE-CAD(SEQ ID NO:5)     MDPDAARHSIGYSIRRTSDKGQFFRVTK-KGDIYNEKELDREV-----YPWYNLTVEAKE 449
P-CAD(SEQ ID NO:6)      EDPDK--ENQKISYRILRDPAGWLAMDPDSGQVTAVGTLDREDEQFVRNNIYEVMVLAMD 522
E-CAD(SEQ ID NO:7)      QEPDTF-MEQKITYRIWRDTANWLEINPDTGAISTRAELDREDFEHVKNSTYTALIIATD 569
N-CAD(SEQ ID NO:8)      QDPDRY-MQQNIRYTKLSDPANWLKIDPVNGQITTIAVLDRES-PNVKNNIYNATFLASD 579
R-CAD(SEQ ID NO:9)      VDPDRF-MQQAVRYSKLSDPASWLHINATNGQITTVAVLDRES-LYTKNNVYEATFLAAD 589
M-CAD(SEQ ID NO:10)     RDPDTE-QLQRLSYSKDYDPEDWLQVDAATGRIQTQHVLSPAS-PFLKGGWYRAIVLAQD 457
                         : *              *    : :    * :     *.               . * .

K-CAD(SEQ ID NO:1)      INNP----KQSSRVPLYIKVLDVNDNAPEFAEFYETFVCEKAK----ADQLIQTLHAVDK 514
CAD12(SEQ ID NO:2)      VSNP----LLTSKVNILINVLDVNEFPPEISVPYETAVCENAK----PGQIIQIVSAADR 515
CAD8(SEQ ID NO:3)       IRNH----SQISRVPVAIKVLDVNDNAPEFASEYEAFLCENGK----PGQVIQTVSAMDK 522
OB-CAD(SEQ ID NO:4)     IHNR----HQEAQVPVAIRVLDVNDNAPKFAAPYEGFICESDQTKPLSNQPIVTISADDK 518
VE-CAD(SEQ ID NO:5)     LDSTGTPTGKESIVQVHIEVLDENDNAPEFAKPYQPKVCENAV----HGQLVLQISAIDK 505
P-CAD(SEQ ID NO:6)      NGSP----PTTGTGTLLLTLIDVNDHGPVPEPRQ-ITICNQSPVRH-----VLNIT--DK 570
E-CAD(SEQ ID NO:7)      NGSP----VATGTGTLLLILSDVNDNAPIPEPRT-IFFCERNPKPQ-----VINII--DA 617
N-CAD(SEQ ID NO:8)      NGIP----PMSGTGTLQIYLLDINDNAPQVLPQE-AETCET-PDPN-----SINITALDY 628
R-CAD(SEQ ID NO:9)      NGIP----PASGTGTLQIYLIDINDNAPELLPKE-AQICER-PNLN-----AINITAADA 638
M-CAD(SEQ ID NO:10)     DASQ----PRTATGTLSIEILEVNDHAPVLAPPPPGSLCSEPHQGP-----GLLLGATDE 508
                                   .   : : : : *:  *          *.              :   *

K-CAD(SEQ ID NO:1)      DDPYSGHQFSFSLAPEAA-SGSNFTIQDNKDNTAGILTRKNGYNRHEMSTYLLPVVISDN 573
CAD12(SEQ ID NO:2)      DLSPAGQQFSFRLSPEAA-IKPNFTVRDFRNNTAGIETRRNGYSRRQQELYFLPVVIEDS 574
CAD8(SEQ ID NO:3)       DDPKNGHYFLYSLLPEMV-NNPNFTIKKNEDNSLSILAKHNGFNRQKQEVYLLPIIISDS 581
OB-CAD(SEQ ID NO:4)     DDTANGPRFIFSLPPEII-HNPNFTVRDNRDNTAGVYARRGGFSRQKQDLYLLPIVISDG 577
VE-CAD(SEQ ID NO:5)     DITPRNVKFKFTLN-----TENNFTLTDNHDNTANITVKYGQFDREHTKVHFLPVVISDN 560
P-CAD(SEQ ID NO:6)      DLSPHTSPFQAQLTDD---SDIYWTAEVNE-EGDTVVLSL--KKFLKQDTYDVHLSLSDH 624
E-CAD(SEQ ID NO:7)      DLPPNTSPFTAELTHG---ASANWTIQYNDPTQESIILKP--KMALEVGDYKINLKLMDN 672
N-CAD(SEQ ID NO:8)      DIDPNAGPFAFDLPLSPVTIKRNWTITRLNGDFAQLNLK---IKFLEAGIYEVPIIITDS 685
```

Fig. 4b

```
R-CAD(SEQ ID NO:9)      DVHPNIGPYVFELPFVPAAVRKNWTITRLNGDYAQLSLR---ILYLEAGMYDVPIIVTDS 695
M-CAD(SEQ ID NO:10)     DLPPHGAPFHFQLSPRLPELGRNWSLSQVNVSHARLRPR----HQVPEGLHRLSLLLRDS 564
                        *       :   *          ::          :              : : : : *

K-CAD(SEQ ID NO:1)      DYPVQSSTGTVTVRVCACDHHGNMQSCHAEALIHPTGLSTGALVAILLCIVILLVTVVLF 633
CAD12(SEQ ID NO:2)      SYPVQSSTNTMTIRVCRCDSDGTILSCNVEAIFLPVGLSTGALIAILLCIVILLAIVVLY 634
CAD8(SEQ ID NO:3)       GNPPLSSTSTLTIRVCGCSNDGVVQSCNVEAYVLPIGLSMGALIAILACIILLLVIVVLF 641
OB-CAD(SEQ ID NO:4)     GIPPMSSTNTLTIKVCGCDVNGALLSCNAEAYILNAGLSTGALIAILACIVILLVIVVLF 637
VE-CAD(SEQ ID NO:5)     GMPSRTGTSTLTVAVCKCNEQGEFTFC--EDMAAQVGVSIQAVVAILLCILTITVITLLI 618
P-CAD(SEQ ID NO:6)      GN--KEQLTVIRATVCDCHGHVETC--PGPWKGG---FILP----VLGAVLALLFLLLVL 673
E-CAD(SEQ ID NO:7)      QN--KDQVTTLEVSVCDCEGAAGVCRKAQPVEAG---LQIPAILGILGGILALLILILLL 727
N-CAD(SEQ ID NO:8)      GNPPKSNISILRVKVCQCDSNGDCTDVDRIVGAG---LGTGAIIAILLCIIILLILVLMF 742
R-CAD(SEQ ID NO:9)      GNPPLSNTSIIKVKVCPCDDNGDCTTIGAVAAAG---LGTGAIVAILICILILLTMVLLF 752
M-CAD(SEQ ID NO:10)     GQPPQQREQPLNVTVCRCGKDGVCLPGAAALLAGGTGLSLGALVIVLASALLLLVLVLLV 624
                                  :   ** *                   .       :*   : :    ::

K-CAD(SEQ ID NO:1)      AALRRQR----KKE-PLIISKEDIRDNIVSYNDEGGGEEDTQAFDIGTLRNPE--AIEDN 686
CAD12(SEQ ID NO:2)      VALRRQK----KKH-TLMTSKEDIRDNVIHYDDEGGGEEDTQAFDIGALRNPK--VIEEN 687
CAD8(SEQ ID NO:3)       VTLRRHK----NEP-LIIKDDEDVRENIIRYDDEGGGEEDTEAFDIATLQNPD--GINGF 694
OB-CAD(SEQ ID NO:4)     VTLRRQK----KEP-LIVFEEEDVRENIITYDDEGGGEEDTEAFDIATLQNPD--GINGF 690
VE-CAD(SEQ ID NO:5)     FLRRRLR----KQARAHGKSVPEIHEQLVTYDEEGGGEMDTTSYDVSVLNSVRRGGAKPP 674
P-CAD(SEQ ID NO:6)      LLLVRKK---RKIKEPLLLPEDDTRDNVFYYGEEGGGEEDQD-YDITQLHRG-----LEA 724
E-CAD(SEQ ID NO:7)      LLFLRRR---AVVKEPLLPPEDDTRDNVYYYDEEGGGEEDQD-FDLSQLHRG-----LDA 778
N-CAD(SEQ ID NO:8)      VVWMKRRDKERQAKQLLIDPEDDVRDNILKYDEEGGGEEDQD-YDLSQLQQPDTVEPDAI 801
R-CAD(SEQ ID NO:9)      VMWMKRREKERHTKQLLIDPEDDVREKILKYDEEGGGEEDQD-YDLSQLQQPEAMGHVPS 811
M-CAD(SEQ ID NO:10)     ALRARFWK-QSRGKGLLHGPQDDLRDNVLNYDEQGGGEEDQDAYDISQLRHPTALS-LPL 682
                            :                 : ::::  *.::**** *   :*:  *.

K-CAD(SEQ ID NO:1)      KLRRDIVP----EALFLPRR-TPTARDN-TDVRDFINQRLKENDTDPTAPPYDSLATYAY 740
CAD12(SEQ ID NO:2)      KIRRDIKP----DSLCLPRQ-RPPMEDN-TDIRDFIHQRLQENDVDPTAPPIDSLATYAY 741
CAD8(SEQ ID NO:3)       LPRKDIKP----DLQFMPRQGLAPVPNG-VDVDEFINVRLHEADNDPTAPPYDSIQIYGY 749
OB-CAD(SEQ ID NO:4)     IPRKDIKP----EYQYMPRPGLRPAPNS-VDVDDFINTRIQEADNDPTAPPYDSIQIYGY 745
VE-CAD(SEQ ID NO:5)     RPALDARPSLYAQVQKPPRHAPGAHGGP-GEMAAMIEVKKDEADHDGDGPPYDTLHIYGY 733
P-CAD(SEQ ID NO:6)      RPEVVLRNDVAPTIIPTPMYRPRPANPD--EIGNFIIENLKAANTDPTAPPYDTLLVFDY 782
E-CAD(SEQ ID NO:7)      RPEVT-RNDVAPTLMSVPRYLPRPANPD--EIGNFIDENLKAADTDPTAPPYDSLLVFDY 835
N-CAD(SEQ ID NO:8)      KPVGIRRMDERP-IHAEPQYPVRSAAPHPGDIGDFINEGLKAADNDPTAPPYDSLLVFDY 860
R-CAD(SEQ ID NO:9)      KAPGVRRVDERP-VGPEPQYPIRPMVPHPGDIGDFINEGLRAADNDPTAPPYDSLLVFDY 870
M-CAD(SEQ ID NO:10)     GPPPLRRDAPQGRLHPQP---PRVLPTSPLDIADFINDGLEAADSDPSVPPYDTALIYDY 739
                                         *            ::  :*       : *   ** *:   : *

K-CAD(SEQ ID NO:1)      EGTGSVADSLSSLESVTTDADQDYDYLSDWGPRFKKLADMYG---GVDSDKDS------- 790
CAD12(SEQ ID NO:2)      EGSGSVAESLSSIDSLTTEADQDYDYLTDWGPRFKVLADMFGEEESYNPDKVT------- 794
CAD8(SEQ ID NO:3)       EGRGSVAGSLSSLESTTSDSDQNFDYLSDWGPRFKRLGELYS---VGESDKET------- 799
OB-CAD(SEQ ID NO:4)     EGRGSVAGSLSSLESATTDSDLDYDYLQNWGPRFKKLADLYG---SKDTFDDDS------ 796
VE-CAD(SEQ ID NO:5)     EGSESIAESLSSLGTDSSDSDVDYDFLNDWGPRFKMLAELYG----SDPREELLY----- 784
P-CAD(SEQ ID NO:6)      EGSGSDAASLSSLTSSASDQDQDYDYLNEWGSRFKKLADMYG-------GGEDD------ 829
E-CAD(SEQ ID NO:7)      EGSGSEAASLSSLNSSESDKDQDYDYLNEWGNRFKKLADMYG-------GGEDD------ 882
N-CAD(SEQ ID NO:8)      EGSGSTAGSLSSLNSSSSGGEQDYDYLNDWGPRFKKLADMYG-------GGDD------- 906
R-CAD(SEQ ID NO:9)      EGSGSTAGSVSSLNSSSSG-DQDYDYLNDWGPRFKKLADMYG-------GGEED------ 916
M-CAD(SEQ ID NO:10)     EGDGSVAGTLSSILSSQGDEDQDYDYLRDWGPRFARLADMYGHPCGLEYGARWDHQAREG 799
                       **  * * ::**: :     : ::*:* :** **  *.:::

K-CAD(SEQ ID NO:1)      ---------------
CAD12(SEQ ID NO:2)      ---------------
CAD8(SEQ ID NO:3)       ---------------
OB-CAD(SEQ ID NO:4)     ---------------
VE-CAD(SEQ ID NO:5)     ---------------
P-CAD(SEQ ID NO:6)      ---------------
E-CAD(SEQ ID NO:7)      ---------------
N-CAD(SEQ ID NO:8)      ---------------
R-CAD(SEQ ID NO:9)      ---------------
M-CAD(SEQ ID NO:10)     LSPGALLPRHRGRTA 814
```

Fig. 4c

```
CLUSTAL W (1.81) Multiple Sequence Alignments Sequence
format is Pearson Sequence 1: P-CADHERIN. 829 aa Sequence
2: E-CADHERIN. 882 aa Sequence 3: N-CADHERIN. 906 aa
Sequence 4: R-CADHERIN. 916 aa Sequence 5: VE-CADHERIN. 784
aa Sequence 6: K-CADHERIN. 790 aa Sequence 7: CADHERIN-8.
799 aa Sequence 8: OB-CADHERIN. 796 aa Sequence 9:
CADHERIN-12. 794 aa Sequence 10: M-CADHERIN. 814 aa Start
of Pairwise alignments Aligning... Sequences (4:5) Aligned.
Score: 30 Sequences (1:2) Aligned. Score: 57 Sequences
(3:4) Aligned. Score: 65 Sequences (2:3) Aligned. Score: 46
Sequences (4:6) Aligned. Score: 34 Sequences (3:5) Aligned.
Score: 29 Sequences (1:3) Aligned. Score: 43 Sequences
(2:4) Aligned. Score: 44 Sequences (4:7) Aligned. Score: 34
Sequences (3:6) Aligned. Score: 35 Sequences (1:4) Aligned.
Score: 41 Sequences (2:5) Aligned. Score: 27 Sequences
(4:8) Aligned. Score: 34 Sequences (3:7) Aligned. Score: 35
Sequences (1:5) Aligned. Score: 25 Sequences (2:6) Aligned.
Score: 34 Sequences (4:9) Aligned. Score: 33 Sequences
(3:8) Aligned. Score: 36 Sequences (1:6) Aligned. Score: 30
Sequences (2:7) Aligned. Score: 30 Sequences (4:10)
Aligned. Score: 40 Sequences (3:9) Aligned. Score: 34
Sequences (1:7) Aligned. Score: 28 Sequences (2:8) Aligned.
Score: 28 Sequences (5:6) Aligned. Score: 38 Sequences
(3:10) Aligned. Score: 39 Sequences (1:8) Aligned. Score:
27 Sequences (2:9) Aligned. Score: 32 Sequences (5:7)
Aligned. Score: 39 Sequences (6:7) Aligned. Score: 57
Sequences (1:9) Aligned. Score: 29 Sequences (2:10)
Aligned. Score: 35 Sequences (5:8) Aligned. Score: 39
Sequences (1:10) Aligned. Score: 36 Sequences (6:8)
Aligned. Score: 56 Sequences (7:8) Aligned. Score: 64
Sequences (5:9) Aligned. Score: 37 Sequences (8:9) Aligned.
Score: 54 Sequences (6:9) Aligned. Score: 61 Sequences
(7:9) Aligned. Score: 54 Sequences (5:10) Aligned. Score:
29 Sequences (8:10) Aligned. Score: 32 Sequences (6:10)
Aligned. Score: 31 Sequences (7:10) Aligned. Score: 30
Sequences (9:10) Aligned. Score: 32 Guide tree file
created:
[/net/nfs0/vol1/production/w3nobody/tmp/454553.2920-
410271.dnd] Start of Multiple Alignment There are 9 groups
Aligning... Group 1: Sequences: 2 Score:13988 Group 2:
Sequences: 2 Score:14412 Group 3: Sequences: 4 Score:13434
Group 4: Sequences: 5 Score:11276 Group 5: Sequences: 2
Score:14114 Group 6: Sequences: 2 Score:16513 Group 7:
Sequences: 4 Score:12445 Group 8: Sequences: 5 Score:11204
Group 9: Sequences: 10 Score:7448 Alignment Score 72993
CLUSTAL-Alignment file created
[/net/nfs0/vol1/production/w3nobody/tmp/454553.2920-
410271.aln]
```

Fig. 4d